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The Bancroft Memorial Lecture.¹

SOME ACUTE VIRUS DISEASES OF THE RESPIRATORY SYSTEM.¹

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FIRST let me record my appreciation of the honour you have conferred upon me in asking me to address you this evening, an appreciation which is the more lively when I reflect upon the achievements of the famous physician in whose memory we are assembled, and the list of my distinguished predecessors in this oration. In choosing as the subject

¹The Joseph Bancroft Memorial Lecture, delivered at a meeting of the Queensland Branch of the British Medical Association on June 7, 1940.

of this address the acute virus diseases of the respiratory tract, and particularly influenza, I had in mind a number of considerations. In the first place, I imagined that a predominantly clinical audience would welcome reference to some of the everyday problems of medical practice; I warn you, however, that I shall have a great deal to say about the experimental approach to these problems, as seems to me only fitting in an oration to commemorate a pioneer medical scientist such as Sir Joseph Bancroft. Secondly, the striking recent advances in our knowledge of these diseases derive almost exclusively from the work of American, English and Australian observers; of these countries, Sir Joseph Bancroft was a native of one and lived most of his life in another. Thirdly, the recent work on influenza and, to a less degree, that on psittacosis illustrate a point that is too frequently ignored in medical circles today, namely, that human medicine has much to learn from veterinary science, and *vice versa*. To you, with

your young veterinary school in Brisbane, I need not lament the false separation of human from animal medicine, to the detriment of both, which has been all too frequent in the past, and which we at the Institute of Medical and Veterinary Science in Adelaide are seeking to remedy by bringing under one roof research on diseases of both man and animals.

Of the diseases I shall consider, I have no doubt that you will regard influenza as of the greatest importance from the practical point of view; the extension of our knowledge of this infection constitutes one of the striking advances of the past decade. The common cold is an ever-present problem, though as yet we have no satisfactory means of dealing with it. Finally, in Australia psittacosis is a definite menace, and much remains to be done in educating the public in the prevention of this wholly unnecessary malady.

Epidemic Influenza.

Until about 1930 many believed that the cause of influenza was the so-called influenza or Pfeiffer's bacillus, or, to use modern terminology, the *Hæmophilus influenzae*. This belief was not, however, universally accepted, and other observers regarded the organism as merely one of the commoner secondary invaders in influenza. Intensive work during the last ten years has shown the latter view to be nearer the truth. This work began in America as the study of an acute respiratory disease of pigs, and represents one of the great contributions of veterinary to human medicine. For initiating this fruitful period of investigation Shope was mainly responsible. (For a convenient summary of early work on swine and on human influenza see Shope.⁽¹⁾)

In the late summer and early autumn of 1918, the year of the last great pandemic of influenza, a new epizootic disease appeared in herds of swine in the great pig-raising States of Iowa and Illinois, in the middle west of the United States of America. It has since reappeared every year, though in different years its severity and extent vary greatly. At the time of its first appearance one of the Federal veterinary inspectors was so impressed by its resemblance to the human influenza then prevalent that he gave it the name of "swine 'flu"; since it has entered the period of scientific investigation it has been raised to the dignity of "swine influenza".

On coming to study the disease, Shope found that the lungs of the animals in fatal cases almost always yielded a pure culture of an organism nearly identical with the human influenza bacillus, and known as *Hæmophilus influenzae suis*. Surely here was confirmation of the ætiological role of Pfeiffer's bacillus in human cases. But you will remember that long ago Koch laid down his famous postulates, one of which was that for a given organism to be considered the cause of a particular disease it must reproduce that disease on passage to a fresh host. Now intranasal instillation of pure cultures of *Hæmophilus influenzae suis* failed consistently to

produce swine influenza, though the disease in nature is highly contagious and all the evidence points to an infection by the nasal route.

After two years of negative results in attempting to reproduce swine influenza, Shope decided for the time being to ignore *Hæmophilus influenzae suis* and to try intranasal inoculation with suspensions of known infectious lungs filtered through a Berkefeld N filter, and thus devoid of visible bacteria. In three of ten experiments apparently negative results were obtained, while in the other seven a mild illness was produced, which Shope called "filtrate disease". Sometimes this disease is so ill defined that it is difficult to recognize, and at most there are slight fever and slight constitutional disturbance, with transient apathy, cough and leucopenia. True swine influenza, on the other hand, causes great prostration, with a 10% mortality rate. In filtrate disease, examination of the lungs reveals only slight, patchy, lobular atelectasis, as compared with extensive pneumonia affecting four or five lobes in swine influenza. But the filtrate disease is highly contagious, and is transmissible indefinitely in series to fresh animals. The ætiological agent has all the characteristics of a filterable virus. Cultures of lungs affected by filtrate disease do not yield *Hæmophilus influenzae suis*.

Here Shope found himself in a dilemma. *Hæmophilus influenzae suis* was constantly present in swine influenza, but experimentally did not reproduce the disease. A filterable virus was also present, but again did not reproduce typical swine influenza. Then it was that Shope thought of combining the two agents. A pig inoculated intranasally with a mixture of virus and bacillus came down with typical swine influenza, as did also pigs brought into contact with the infected animal. Finally, I have said that, though mild, filtrate disease is highly contagious; if pigs which have been in contact with filtrate disease are infected with *Hæmophilus influenzae suis* alone, they develop typical influenza. These results can be interpreted in only one way. In the pig two factors are necessary for the production of full swine influenza—the virus and the swine influenza bacillus—and either acting alone does not produce the typical disease.

At this point in 1933 Smith, Andrewes and Laidlaw in England took up the study of human influenza.⁽²⁾ We can seldom learn much about a human malady until we are able to reproduce it experimentally. In the case of an infectious disease this implies the finding of a susceptible animal other than man, and sometimes such a discovery is made in the most unlikely quarter. In 1933 Smith and his co-workers found that by intranasal inoculation with bacteria-free filtrates of the pharyngeal washings from human patients with influenza, they could, after an incubation period of two days, produce in ferrets a nasal catarrh with variable constitutional disturbance. The disease was readily transmitted in series and was due apparently to a filterable virus. The serum either from ferrets which had recovered, or from human beings convalescent from influenza, neutralized this virus. You

will notice that in the ferret there is no mention of the participation of the influenza bacillus.

It was found further that the virus of swine influenza also produced a similar disease in ferrets, and Shope⁽³⁾ noticed that if the inoculations were made under ether anaesthesia, which irritates the respiratory tract, a more severe illness with definite pneumonia resulted. The addition of *Hæmophilus influenzae suis* to the inoculum did not further increase the severity of the disease.

After the human influenza virus had been passed a number of times in ferrets, it gradually became capable of infecting white mice, provided that these were anaesthetized with ether at the time of the intranasal inoculation.⁽⁴⁾ After adaptation of the virus to the mouse, nearly 100% of infected animals died. Swine influenza virus could be made to infect mice without preliminary passage in ferrets, and again the presence of *Hæmophilus influenzae suis* made no difference to the severity of the illness. In mice the disease is purely pneumonic, whereas in the ferret the upper portion of the respiratory tract ordinarily suffers most severely.

When the immunological reactions of the various strains of influenza virus first came to be studied by serum-neutralization methods, it was found that four strains of human virus obtained in 1933 and 1934, from such widely separated localities as London,⁽²⁾ Puerto Rico,⁽⁵⁾ Philadelphia⁽⁶⁾ and Melbourne,⁽⁷⁾ were apparently identical. Similarly, three strains of swine influenza virus obtained in different epidemics were identical.⁽⁸⁾ Moreover, animals which had recovered from either human or swine influenza were usually immune to the other virus.⁽⁹⁾ Yet cross-neutralization of swine virus with antiserum to the human virus, or in the opposite direction of human virus with antiserum to the swine virus, was inconstant. These results suggested that the two viruses were closely related antigenically without being identical.

Such was the early experimental work on which later intensive studies of each outbreak of influenza and influenza-like conditions have been based.

A most important question soon considered concerns the morbid states that we are to include under the term "influenza". Can we use it indiscriminately for any pyrexia of unknown origin accompanied by symptoms referable to the upper or lower portion of the respiratory tract? If not, to what clinical condition are we to attach this label? Stuart-Harris and his colleagues in England⁽¹⁰⁾ have tried to place the diagnosis of influenza on a more satisfactory basis than heretofore. Beginning in 1936, they examined in detail the clinical condition of many patients in various outbreaks of so-called influenza, finishing with the influenza epidemic of 1936-1937. They correlated the symptoms with (a) positive or negative results obtained by attempts to isolate a virus in ferrets, and (b) the appearance of antibodies to the influenza virus in the blood during convalescence, or, if antibodies were previously present, their increase following the illness, as would be expected had the patient suffered fresh infection with the virus. (It has since

been shown that of the two tests the latter is the more sensitive.⁽¹¹⁾) Of five such outbreaks, only the last yielded the influenza virus or any other evidence that the virus was concerned, or, in other words, that the clinical diagnosis was in any way justified. It was clear that influenza is only one disease of several fairly similar, and we must now ask ourselves whether any criteria for a differential diagnosis exist.

Stuart-Harris found that in the 1936-1937 epidemic of true influenza the majority of patients presented a remarkably uniform clinical picture, differing only in the severity of the illness. Probably in the mildest examples the illness was sub-clinical and the patient afebrile. In the scale of ascending severity came the patients with the usual symptoms of influenza, patients with slight abnormal physical signs in the chest, patients with definite bronchiolitis, and finally patients suffering from frank pneumonia. All these conditions merged insensibly one into another, and there was no sharp separation of pneumonia from influenza, as might be inferred from some text-book descriptions. Virus was recovered from the lungs in some of these cases of pneumonia, either alone or associated with *Staphylococcus aureus* in pure culture. In other cases virus was not present; but pneumococci, often associated with *Hæmophilus influenzae*, were obtained on culture. Hæmolytic streptococci, so frequent in the 1918 epidemic, were isolated only once.

Although individual cases were sometimes difficult to diagnose, in general the cases of true influenza could be distinguished from those of what may be called "febrile catarrh" by the points shown in the accompanying tabulation.

Epidemic Influenza.

History.—The onset is sudden, without premonitory symptoms. The first symptoms are constitutional, and include headache, shivering, muscle pains and dizziness. Respiratory symptoms develop later with coryza, sore throat and cough.

Course of Fever.—A rapid rise of temperature on the second day of illness may or may not be followed by a remission of temperature on the third day; but there is usually renewed pyrexia on the fourth day. General symptoms still predominate, but a short dry cough appears.

General Aspect.—A heavy, drowsy facies, drooping eyelids, glistening eyes, dusky facial flush and slightly cyanosed lips are characteristic.

Physical Signs.—An obstructed nose, a furred tongue, a husky but not hoarse voice, and pharyngitis are present. The pharyngitis is posterior in position, with injection of the large vessels, a tendency to dryness and a granular appearance. Rhonchi or râles appear at the bases of the lungs in the later stages of fever.

Febrile Catarrh.

History.—The onset is insidious, with premonitory "cold" and cough. Respiratory symptoms usher in the disease, and sore throat and cough dominate the picture. The cough is paroxysmal, irritating and painful. The voice is hoarse. Often there is much expectoration.

Course of Fever.—General symptoms come later; there is no characteristic course of the fever.

General Aspect.—The patient has the appearance associated with a heavy "cold", with brightly flushed face, injected conjunctivæ and slightly cyanosed lips.

Physical Signs.—An obstructed nose, a clean or furred tongue, a hoarse voice and signs of tonsillitis or pharyngitis are present. The last is anterior as well as posterior, with intense capillary injection. There is mucous or mucopurulent exudation. Usually signs in the chest are absent, but rhonchi may be heard.

<i>Epidemic Influenza.</i>	<i>Febrile Catarrh.</i>
Complications. —Chest complications predominate and characteristically take the form of bronchiolitis or pneumonia.	Complications. —Chest complications are commoner than others, and include bronchitis of the larger tubes or bronchopneumonia. Hemolytic streptococci are commonly associated with the chest complications.
Variations. —Cases are uniform in type (though not in severity) and there is no tendency to admixture with cases of tonsillitis et cetera.	Variations. —The clinical picture is very variable. Cases as described above are often admixed with those of frank tonsillitis et cetera.
Character of Epidemic. —The epidemic appears suddenly, rises rapidly to a peak, and ends in about two weeks in a closed population.	Character of Epidemic. —The epidemic has a slow rise and fall, with a prolonged duration over several weeks.
Influenza Virus. —The influenza virus is recoverable from the pharynx.	Influenza Virus. —The influenza virus is not recoverable from the pharynx.

You will notice that no mention was made of gastric or nervous symptoms as characteristic of influenza. In the 1936-1937 English epidemic there was no tendency to protracted convalescence or to post-influenzal depression, and leucopenia was inconstant. However, Stuart-Harris has since described the development of a neurotropic strain of influenza virus,⁽¹²⁾ so that we must possibly regard some strains of virus as potential incitants of nervous disorder.

Not all contacts with patients suffering from influenza develop the clinical disease. In various outbreaks⁽¹¹⁾⁽²¹⁾ it has been noticed that a rise in antibody titre may occur in the serum in the absence of any definite symptoms—in other words, that sub-clinical infections may occur; as we shall see later, such cases may be of great importance in the spread of the disease. Incidentally, it has also been observed⁽²¹⁾ that the development of individual cases of clinical influenza cannot be correlated with the amount of circulating antibody possessed by the patient at the time of infection. Taking the population as a whole, however, the general level of immunity rises sharply during an epidemic and then falls very gradually in the interval preceding the next major outbreak.⁽²⁴⁾⁽²⁵⁾ In the inter-epidemic periods influenza virus cannot be isolated from cases of apparent influenza, and there is no serological evidence of the occurrence of any form of respiratory disease caused by the virus.⁽²⁵⁾

It is here, with these comforting diagnostic criteria, both clinical and experimental, that I should have preferred to leave the subject. Still more recent studies, however, have introduced once more an element of confusion into a temporarily harmonious picture, and no account of influenza is complete without brief consideration of the new difficulties which have arisen.

In the first place, the clinical recognition of influenza has not proved so simple a matter as was hoped. In 1937 Francis⁽¹³⁾ described an outbreak in California which had most of the characters of epidemic influenza as set forth above, but in which no influenza virus could be obtained. Martin and Fairbrother⁽¹⁴⁾ followed with an account of a widespread though mild epidemic in the Manchester

district in the winter of 1938-1939. Again a virus was not isolated from cases of clinical influenza, and serological tests failed to show an increase in antibody titre to the influenza virus. The authors remark that the uniformity of the clinical picture suggested a single aetiological agent, which did not appear to be bacterial in nature. At the same time Stuart-Harris and his colleagues studied other outbreaks in England⁽¹¹⁾ and found that, contrary to their previous experience, in 1939 no sharp clinical or epidemiological distinctions were possible between outbreaks yielding the specific virus and those from which virus could not be recovered. Their observations suggested the admixture in each outbreak of a proportion of cases of true influenza with many other cases of a clinically similar but aetiotologically different malady. In the influenza epidemics of 1933 and 1937 there had been sharp peaks in the mortality rate from pneumonia, and in those years it was possible fairly regularly to isolate the influenza virus; moreover, serological evidence indicated that the epidemics of those years were due predominantly to the influenza virus. In years adjacent to peak years, namely, 1934, 1936 and 1938, influenza was uncommon and the virus was hardly ever isolated. In 1935, and again in 1939, each two years removed from a major outbreak of influenza, there were many cases of an influenza-like condition, but there was no peak in the mortality rate from pneumonia, and virus was recovered in only a minority of cases. The full significance of these observations will be decided only after further observations.

Another complication introduced into the study of influenza results from the existence of a number of serologically distinct strains of virus,⁽¹⁵⁻¹⁹⁾ even in the course of a single epidemic.⁽¹⁷⁾⁽²⁰⁾ Thus Burnet and Lush isolated a number of distinct strains of virus from the Melbourne epidemic of 1939. They are confident that no recognizable epidemic of influenza occurred in Melbourne between 1935 and 1939, and conclude that the 1939 virus most probably arrived from overseas. Now it is very improbable that a number of antigenic variants would be imported into and become active in Australia at exactly the same time. The only alternative is to suppose that during its widespread dissemination in an epidemic a single strain of virus may give rise to a number of antigenic variants; on such a basis we might possibly account for the multiple waves of an outbreak such as the 1918-1919 pandemic. Obviously, however, such behaviour on the part of the virus will not assist our efforts at specific prophylaxis or treatment, which are, of course, the most important problems for the practising physician.

Andrewes⁽²²⁾ has considered the means at present available for the control of influenza. Clinical and epidemiological data and the known habitat of the virus in the upper portion of the respiratory tract make it certain that the disease is spread by droplet infection. Experimentally, influenza virus has been shown to survive for at least thirty minutes in fine

mist sprayed into a chamber. Infection doubtless comes as a rule from those suffering from or incubating the disease; but it is probable that carriers also play a part. Thus, in April, 1935, Point Barrow, the northernmost settlement in Alaska, was visited by three men who arrived by air from centres further south, where influenza was prevalent. Eight days later influenza appeared at Point Barrow, although none of the three new arrivals contracted it. Again, virus has been recovered from an influenza contact who did not himself suffer from any symptoms, and, as we have seen, during an epidemic antibodies may increase in the serum of contacts who themselves remain healthy. It seems extremely probable that such people act as carriers. While, therefore, infection may be avoided by rigid isolation of small groups of people or of island communities, the difficulties in the case of the general population in large centres are obvious.

Droplet-proof masks may be a useful protection for those engaged in tending sick persons, but are not likely to find favour with the general public. Gargles, douches and sprays have not proved effective.

In animals considerable success has followed vaccination, and three methods have proved effective. Living influenza virus has been injected subcutaneously or intraperitoneally, and by these routes of inoculation has been found to be incapable of causing influenza unless given in enormous doses, while giving rise to antibodies which circulate in the blood stream. Living influenza virus, which has lost most of its virulence for man by repeated passage through mice or tissue-cultures, has been inoculated intranasally. Influenza virus inactivated with 1:5,000 formaldehyde or heat has also been used. In a limited number of trials in man no clear-cut beneficial results have so far been obtained. This may be partly because of the number of strains of virus differing antigenically one from another. I have also stated that the development of clinical influenza is not related closely to the amount of antibody in circulation.

Quite recently, Climenko, Crossley and Northey⁽²³⁾ have recorded the protective action in mice of a new chemotherapeutic agent known as disulphanilamide.

To conclude: in spite of contradictions and difficulties, in the last ten years definite progress has been made in the study of influenza. From many outbreaks a specific filterable virus has been isolated. This alone may produce severe illness in the ferret and the mouse, but in severe cases in man it is frequently associated with various bacteria, such as *Hæmophilus influenzae*, *Streptococcus pneumoniae*, *Staphylococcus aureus*, and so on. In the pig the association with *Hæmophilus influenzae suis* is apparently obligatory, if appreciable illness is to result. Accurate clinical differentiation of influenza, except during major epidemics, is clearly a difficult matter, for had it been simple it would have been achieved years ago. The present evidence suggests

that there are a number of similar infections, only one of which is due to the virus known today. The existence of a number of antigenically different strains of this virus hinders specific prophylaxis. But when you realize that all the information presented has been obtained within the space of ten years, you must with me feel confident that yet another problem of human medicine is well on the way towards solution.

The Common Cold.

Any observant keeper of apes at zoological gardens will tell you that, when the attendant who looks after the chimpanzees suffers from a cold, his charges contract it, transmit it to other chimpanzees, and in short behave in all ways like human beings, except that they show a greater tendency to develop pneumonia as a sequel. This indeed is the chief source of mortality among these pre-eminent attractions at the zoo, and conclusive proof that they are, as the old lady put it, "so human". Apart from human volunteers, the anthropoid apes are our only laboratory animals for the study of the common cold. Need I add that, because of the cost of these creatures, research has been greatly hampered and has been carried out mainly in one of the wealthier American institutions. It is typical of the best modern research in the United States of America that a colony of chimpanzees has been kept over a prolonged period, running into years, in strict quarantine and in rooms maintained at a constant temperature. All laboratory workers and attendants entering the isolation units wore masks and full surgical outfit. The results obtained in human volunteers have thus been confirmed and amplified.

As long ago as 1914 Kruse showed that human beings receiving intranasal instillations of bacteriologically filtered nasal washings from patients suffering from acute coryza themselves contracted colds. This observation was confirmed by several workers. In 1930 Dochez and his co-workers⁽²⁶⁾ showed that chimpanzees readily contracted colds, with clinical manifestations very similar to those in man.

The experimental cold of average severity has an incubation period of about ten hours. A volunteer who receives his first inoculation at noon usually notes some dryness of the throat and heaviness of the head before going to bed. Symptoms of coryza appear next morning. Symptoms usually increase in severity for forty-eight hours and then recede, so that the individual is restored to normal after four or five days. Constitutional symptoms are not infrequent; but fever is not present in uncomplicated cases. The throat is red and the lymph follicles are enlarged, but severe sore throat is not seen.

In other recent American work the bacterial flora of the nose and throat of human beings and chimpanzees has been examined regularly over long periods. These studies have shown conclusively that, although they may be of importance as secondary invaders, the ordinary naso-pharyngeal

organisms—streptococci, pneumococci, influenza bacilli, and so on—are themselves incapable of initiating a cold, which is dependent upon infection with the specific virus.

The virus can be cultivated readily in tissue culture, though prolonged cultivation leads to a loss of virulence.⁽²⁷⁾ In the chimpanzee, as in man, immunity lasts on an average about three months, after which period the animal or patient is susceptible to fresh infection.

Paul and Freese have further confirmed these findings by study of an isolated Arctic community in Spitzbergen.⁽²⁸⁾ Spitzbergen is ice-bound for from seven to nine months in the year, according to climatic conditions, and during this period has no communication with the outside world. The community established there possesses one medical practitioner, and in addition was studied by the workers mentioned over a period of eleven months. The incidence of colds per person in Spitzbergen is one a year—that is to say, about half the average for dwellers in the temperate zones. These colds occur in the form of an epidemic within one to two weeks of the arrival in port of the first steamer after the winter, and in the year of Paul and Freese's observations they affected 90% of the population. Fur trappers out of town during the critical period may escape, only to succumb if they arrive in town during, or soon after, the epidemic. No correlation was noted between the incidence of colds and the various meteorological factors popularly associated with them, namely, cold, damp or sudden drops of temperature. Accidental falling into ice-cold water, through breaking of an ice surface, might evoke a cold during the epidemic period, when the individual might reasonably be supposed to be carrying the virus; but in the seven to nine months of winter such an accident was not usually followed by respiratory complications. The incubation period here was found to be about forty-eight hours, the first cases beginning within this time of arrival of the first ship of the season. Again the bacterial flora of the nose and throat was found to play no part in initiating infection.

In an attempt at specific prophylaxis, Dochez and his colleagues obtained no evidence that the injection of living cold virus subcutaneously appreciably reduced the number of colds contracted.⁽²⁸⁾

Psittacosis.

The last respiratory disease I shall consider is psittacosis, and more especially psittacosis under Australian conditions. Clinically, as you know, the disease manifests itself as a typhoid-like condition with atypical pneumonic signs in the chest and a consistent absence of Widal reaction. There is usually a history of contact with a parrot or budgerigar within the preceding week or fortnight. The disease in man has been recognized since 1880, and occurs sporadically or in small outbreaks. In 1929 and 1930 outbreaks appeared in many parts of the world, and in America 169 cases occurred, with 33 deaths. Like influenza and the common cold, it was until recently attributed to bacterial agency,

the so-called psittacosis bacillus. In 1930, however, Bedson and his colleagues showed that a filterable virus was the causative agent.⁽³⁰⁾ At this time the disease was supposed to be confined to South American parrots, so that after the 1929 outbreak in England the British Government prohibited their importation without placing any restriction upon Australian parrots and budgerigars.

In order to study the disease experimentally in birds with no possibility of spontaneous infection, Meyer and Eddie imported into California a consignment of South Australian budgerigars, and to their surprise found a considerable proportion of these to be suffering from the disease.⁽³¹⁾ Following this lead, Burnet⁽³²⁾ showed that psittacosis is enzootic among several of the common species of Australian parrots in the wild state, and soon afterwards Burnet and Macnamara proved that human infection in Australia was by no means infrequent.⁽³³⁾ In Adelaide also, since early 1937, we have by experimental procedure diagnosed as psittacosis a number of conditions in patients in the Royal Adelaide Hospital. In Sydney, Tremain⁽³⁴⁾ isolated the virus from a Bengalese finch imported from China and from two species of finches caught near Darwin. In other countries, canaries, thrushes and even sea-birds have been known to transmit psittacosis to man.

Most of the strains of virus isolated in Australia appear to be of low virulence, and for a time it was considered that in nature the disease, though highly contagious for young birds, was usually so mild as to pass unnoticed. When such young birds are captured and crowded together in insanitary surroundings, as in the average bird-shop, more severe infections occur and there is considerable risk to human beings. That the natural disease is not always a mild one, however, was shown in 1938, when in the south-east of South Australia, in Victoria and in Tasmania a heavy mortality among wild parrots was proved both by Burnet and myself to be due to the virus of psittacosis.⁽³⁵⁾

In sick birds virus is present in the nasal discharges and in the faeces, and as these dry and become reduced to dust they contaminate the atmosphere. It is not surprising that in these circumstances the disease is occasionally transferred to man, and cases of human infection have followed a mere short visit to a bird-shop. The workers on psittacosis at the Rockefeller Institute found it necessary to wear full surgical uniform *plus* gas masks to eliminate laboratory infections with the virus. Fortunately, however, a diagnostic measure safer than inoculation of parrots has since been evolved, namely, intraperitoneal inoculation into mice; from these animals the chance of human infection is much smaller. This is now the standard laboratory method of diagnosing the disease. After inoculation of blood, pleural fluid, sputum or ground-up lung tissue, the mice may fall ill in from four to twenty-one days. When sputum is used some mice may die of bacterial infection; but usually some of them manage to kill off the

contaminating bacteria and survive to develop psittacosis. If the mice do not become obviously ill, they may still have developed the disease in a subclinical form. They are therefore killed, and their spleens are passed to further mice in the hope of increasing the virulence of the infection and making it apparent. In mice which do develop the disease the virus can be easily detected in suitably stained smears from the spleen or liver. The disease in the mouse, as in the parrot, is one affecting chiefly the liver and spleen, and it is only in man and in the monkey that the lungs are often affected.

The psittacosis virus is a large one—in fact it is the largest known, and approaches the small bacteria and the rickettsiae in size. After suitable staining methods have been employed, or by dark-ground illumination, it can easily be resolved with a good microscope as consisting of small coccoid and bacillary bodies. It can be grown in tissue culture, and its cycle of development in affected cells has been the subject of study. The virus particles rapidly become intracellular, when they increase in size and number and appear to lie in a homogeneous ground substance. Later a large body containing numerous fine elementary bodies is formed. Both forms may be seen in stained films.

At the Rockefeller Institute, when research was conducted on psittacosis, the staff was immunized to prevent laboratory infections. As with influenza, the injection of living virus by the intramuscular route produces effective immunity without producing any signs of disease. But in everyday life control of psittacosis is obviously a matter of educating the public, as we are now trying to do by means of pamphlets and newspaper articles in South Australia. Birds reared in captivity from a healthy stock are safe pets provided that they are not brought into contact with wild birds or birds recently caught. As is not the case with most diseases, an educated public has the power completely to eradicate the disease in man.

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ORTHOPÆDICS AND THE GREAT WAR.¹

By L. O. BETTS,
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At the outbreak of war in 1914 orthopædics as a special branch of surgery was comparatively unknown in Britain and Australia. Except for Sir Robert Jones and a few of his students, little

¹ President's address, delivered at the annual meeting of the Australian Orthopædic Association on March 29, 1940, at Sydney.

was known of systematic orthopaedic treatment. In the United States of America the specialty had been developed for many years, but chiefly in dealing with the more chronic conditions. The history of its development and advancement during the war period is worthy of study.

As the story is mainly that of Sir Robert Jones's connexion with the army medical services, I must be excused if the main part of this address consists of quotations from his letters *et cetera*.

The position in 1914 was adequately described by Sir Robert in a letter to Sir George Makins:

During the first twelve months of the War no provision of any sort was made for cases crippled and deformed, and early evacuation was both the instruction and the routine. The result was that many men were discharged from the Army in a very large number of cases totally unfitted either for military or civilian life. These men promised to become foci of seething discontent, and at that time a menace to successful recruiting. Letters poured in and representations were made which rendered it imperative that some effort should be made to stem the tide of premature discharges. It was then that Sir Alfred Keogh asked me if I could help him, and it was decided (in early 1915) that an experiment should be made in Liverpool. Two hundred and fifty beds were allocated for this work at Alder Hey, which soon expanded to five hundred and sixty. I then went over the country to see the type of case which required reconstruction . . .

And this was Sir Robert Jones's finding:

Without segregation and continuity of treatment we were in danger of scrapping thousands of cases who possessed the potentialities of recovery, and these were not merely the serious cases, but also those suffering from lesser injuries, upon the recovery of which we depended in order to replenish our fighting forces . . . Many of these conditions were recoverable, and most of them might have been prevented.

Amazing as it now appears to us, at that time the value of the Thomas bed knee splint had not been recognized by general surgeons, although it had been in general use at Liverpool for over forty years. Thomas himself had offered it to the French Army in the Franco-Prussian War in 1871.

Sir Robert Jones went on as follows:

In pre-war days a certain kind of homage was paid to the Thomas splint, but that was all. Its use was strictly limited, and in spite of its simplicity very few surgeons knew how to apply it, and in many of our teaching hospitals it was known only by name. In Liverpool we have long taught that fracture of the femur, simple or compound, treated by a Thomas splint should at the worst not yield more than half an inch of shortening, and that if a surgeon desired it he could easily produce an appreciable lengthening. It has taken a Great War to drive this truth home. The caliper splint, which has been in use for over forty years at Nelson Street, was scarcely known.

The long Liston splint was being used officially by the Royal Army Medical Corps in 1914 and 1915; but by the end of 1915 the Thomas splint had been generally adopted, with the great saving in life and limb of which you are all acquainted.

"Notes in Military Orthopaedics", published in 1916, became the *vade mecum* of the military medical men, and in the introduction to it Sir Arthur Keogh makes the following statement:

Of the many surgical problems which have needed especial attention during the past two years, none equals

in importance those generally known as orthopaedic. The term has been extended to include cases not hitherto comprehended as belonging to this branch of surgery, and the wider application of orthopaedic principles has been forced upon us by their special importance at the present time.

This importance rests not merely on surgical, military or even humanitarian considerations. The problem of the maimed and discharged soldier has leaped into prominence, and we are forced by grave social and economic considerations to devote our attention not merely to producing a sound administrative system to solve it, but to securing the highest professional efficiency to ensure the best results.

In 1916, after much patient work by Sir Robert Jones, Shepherd's Bush Orthopaedic Hospital was opened. With its complete organization, comprising skilled orthopaedic treatment, occupational therapy and workshops, it attracted great attention, and probably was instrumental in furthering the orthopaedic cause more than any other factor. Royalty became interested, and so did the authorities.

Shepherd's Bush was the first orthopaedic hospital I ever saw; Elmslie, Naughton Dunn and Bristow were on the staff. Robert Jones was made Inspector of Military Orthopaedics at this time, and orthopaedic centres sprang up all over England. One can imagine the amount of work he had to put into this organizing effort.

Yet in the third year of the war was recorded one of those inimitable army minutes that make life at times so trying to the army medical officer, yet add to our gaiety later:

P.S. to D.G.A.M.S.

We notice that authority was given for a very extensive tour last August, but hope such a large expenditure of petrol is not contemplated this year in view of the critical shortage. Possibly you will urge Colonel Sir Robert Jones to use the railways in every case possible and hire locally at the Government expense as a far more economical method from a national point of view.

(Signed), D.A.D.S.

Q.M.G. 6.

Colonel Sir Robert Jones has been asked to comply, as far as possible, with your Minute, and there is no doubt that he will do so.

The D.G., however, asks me to point out that this tour by motor was arranged to conserve Colonel Sir R. Jones' valuable time, the value of which cannot be too highly estimated.

He is the only man who can do the orthopaedic inspections on which he is engaged, and which result in the return of so many men to the fighting line far earlier than they would otherwise get there.

With a restricted train service days would be lost on such a tour as that carried out last year, and such days are invaluable.

(Signed), P.A. to D.G.A.M.S.

The question of the discharged soldier was dealt with in a letter of May, 1917:

From the beginning of the War I have been convinced that the most serious problem for us as a nation is the question of how to deal with the disabled discharged soldier. In the early days thousands were discharged as unfit for the Army, and, more is the pity, they were unfit for anything else. A large proportion of them should not have been discharged at all, for with orthopaedic treatment they might have been transformed into useful citizens, instead of forming the nucleus of a discontented and bitter party, large enough to paralyse all efforts at progress . . .

I have lived and worked long enough to realize that the aim and not the end is the main thing. When the end comes, and Peace is declared, the cry will be for War Memorials. Is not now the time to decide on these? You do not want to wait until the dead are forgotten. Are our memorials to be spiritual or material, living and permanent, or dead and cold? For my part I have no hesitation in saying that marble or brass has no re-echoing voice to me. My feeling is that the heroic spirit that sent our beloved dead to their end should be reflected in an equally heroic effort on our part to make and keep the nation efficient . . .

My opinion is that no soldier should be discharged from the Army until everything is done for him to make him a healthy and efficient citizen . . .

It is suggested by some to keep a tight hold upon the soldier by means of his pension. This will never answer. Can we imagine Mr. Lloyd George answering a democracy when charged with interfering with a wounded soldier's pension? It seems to me that a pension should be inviolate, and all these constant efforts at periodic revision defeat their ends. If I were wounded and received a full pension of 25s. a week, and was asked to learn a trade by which I could make 15s. and be paid 10s. pension, I should probably prefer to remain idle. The discharged soldier should have every incentive to work, so that his industry should add to his wealth. The productivity of his labour becomes the important asset to the Nation, not the number of shillings paid out to him.

To those of us who have had anything to do with the pensioned soldier during the last twenty years, the wisdom of these words is undeniable. Cases are still coming up for review, in which, if the patient had been treated to finality on orthopaedic lines twenty years ago, he would have carried on efficiently in the labour world without trouble. Now it is too late. Let us hope that a saner outlook will be taken by our authorities in this present conflict.

With the large development of the orthopaedic centres there was a great shortage of trained men to staff them, and it was impossible to obtain young men in any numbers in the services. In fact, at one time Sir Robert had to battle to retain some of his younger trained men. He was helped by the arrival of numbers of young American orthopaedic surgeons. Of this he writes as follows:

The American surgeons who have kindly come to our assistance . . . have been an enormous help, and have won the appreciation and respect of their colleagues wherever they have been cast. In addition to the more senior men the American Government are asking us to train junior men to make them more efficient at the front. I am extremely sorry that our own Government has been unable to do the same thing. A training in our centres would be of great assistance to the young surgeon. The Australians are availing themselves of it, and the best known New Zealand surgeons have all undergone a four months' course in preparation for work at home. These surgeons have expressed the greatest gratitude for what they have learnt. I am only too desirous of roping in the general surgeon, but how am I to do it unless they are first of all prepared to learn the lesson?

That was, I believe, the real beginning of Australian and New Zealand orthopaedics. The value of these associations to American orthopaedics was immense, and their influence can still be seen in the American orthopaedic centres today. Goldthwait stated that "the fact that there was less than 4,000 amputations among 200,000 wounded American soldiers was due to the methods of treatment by Sir Robert Jones". He added:

. . . more than four hundred young American surgeons received invaluable orthopaedic training under Sir Robert Jones, training they could not have acquired otherwise in a lifetime.

He felt that the whole country was enriched by the return of these men to civil practice.

At the end of the war there were 30,000 beds in special orthopaedic hospitals. From the lessons learnt from these orthopaedic centres sprang the many voluntary and county schemes for the care of cripples that are general throughout Britain today, and which have had such a great influence on the rapid development of orthopaedics there. The work in these centres attracted many young men, only some of whom followed on in the specialty after the war.

That a better knowledge of orthopaedic principles was necessary in both British and Australian services there was no doubt. In a report at the end of 1917 on the work at Number 2 Command Depot, Weymouth (which had gradually developed into an orthopaedic camp), I wrote (as senior medical officer):

The condition of the men arriving from various hospitals is still unsatisfactory. Men are being allowed to wear splints (often clumsy and heavy) a great deal longer than necessary, and much of the disuse disabilities of limbs seen here is due to this practice. It would be a great advantage if splints were taken away as early as possible and men encouraged to use their limbs. There seems to be a great lack of appreciation of the value of the correct postural treatment of weakened or paralysed muscles. Cases of drop wrist and drop foot are still arriving without splints or appliances at all. Cases of shoulder wounds are all treated with the arm by the side, whereas if they had been treated on an abduction splint, most of the disabilities of stiff shoulders from weak deltoid or contracted scars in the axilla would be unknown. It is most regrettable that in the fourth year of the War many M.O.s fall in their knowledge of these first principles of orthopaedic treatment. Had M.O.s realised the harm done by the excessive time splints are worn and the advantages of early movements and postural treatment, hundreds of Australians would have been fitted for general service again, instead of which they have been invalided home.

You will note from this that in the fourth year of the war the simplest of orthopaedic principles were being neglected; this resulted in much unnecessary crippling. This will assuredly occur again unless the lessons of twenty-five years ago are taken to heart and full use is made of special knowledge wedded to intense organization.

The war provided a great stimulus to orthopaedics in all countries, particularly in Italy, where Putti developed his wonderful clinic at Bologna, and Böhler had the opportunity to advance his work, which has proved so valuable in the treatment of fractures throughout the world.

The war commenced with orthopaedics an almost unknown specialty; but when it ended orthopaedics was well established and has never looked back. It probably progressed more in those four years than it would have done in a generation otherwise; and this was entirely due to the patience, energy, genius and personality of Robert Jones.

In conclusion, let me quote from a letter of Sir Alfred Keogh to Jones in 1931, recalling "the early days of orthopaedic work in the war, when its importance had to be vindicated and established":

To you and to you alone, the successful result has been due.

Reviews.

GESTURE AND LANGUAGE.

Two years ago Dr. Macdonald Critchley published the unique case history of the "aphasia" of a partial deaf mute whose ability to finger-spell became impaired after a stroke. The implications regarding the relationship between gesture and speech, which were mentioned in this paper, have now been expanded by the author in a small book entitled "The Language of Gesture".¹ He distinguishes three types of gestures by which ideas and feelings can be communicated, namely, pantomime, expressive movements, and vasomotor and pilomotor reactions. These types correspond to the more voluntary propositional, the more automatic and postural, and the autonomic involuntary levels in the hierarchy of nervous function. The neurology of disturbances of these types of gestures is discussed briefly. The theories of the origin of language are mentioned. Philologists have achieved a sense of humour. Max Müller started this innovation in science by dubbing the onomatopoeic and interjectional theories with the nick-names bow-wow and pooh-pooh. His opponents retorted by calling Müller's suggestion the ding-dong theory. The yo-heave-ho theory followed. Sir Richard Paget's fascinating hypothesis, that the articulatory movements of speech mimic gestures, is known by the irreverent title of the ta-ta theory, whereby the movement of the tongue is caricatured as a farewell wave of the hand. Dr. Critchley has carried out a rapid survey of the sign-talk of deaf mutes and native and civilized peoples, and of the use of mime and gesture in the theatre, in ritual, and in public speaking. A library rather than a book would be necessary to cover this immense field adequately; but Dr. Critchley's monograph gives ample illustration of the variety of means by which internal speech can gain expression. He does not mention that most artificial of all gesture languages achieved by the marionette operator. References to a comprehensive literature are given. Dr. Critchley refers to the descriptions by Roth, Stirling and Howitt of the gesture languages of the Australian natives. We cannot refrain from pointing out that the paucity of Australian literature on this aspect of aboriginal culture is another reminder of the urgent need for extending anthropological research in Australia before it is altogether too late.

THE SYNOVIAL MEMBRANE AND FLUID.

DAVID H. KLING, in "The Synovial Membrane and the Synovial Fluid", claims to present "the result of research conducted for the past fifteen years on the structure of synovial membrane, the origin and nature of synovial fluid and the composition of pathological joint effusions". A great part of the material was gathered during the

service of the author, as Research Fellow in the Hospital for Bone and Joint Diseases, New York.

The pathology of all varieties of joint effusions and its clinical application are dealt with extensively and clearly. Methods of investigation are set out in detail, and their value is fairly and honestly discussed. This book deals with a subject that has been very much neglected in the past, and in it is collected a great deal of material that cannot be found in any other book. It should prove most useful as a reference book to clinicians, pathologists and orthopaedic surgeons. A very full bibliography is appended.

"THE MEDICAL ANNUAL".

THE receipt of "The Medical Annual" is always a welcome event, for in no other volume is such a wealth of information on the progress of medicine to be found. The volume for 1940¹ is well up to the standard of those that have gone before. Here is no attempt to divide medicine into so many specialties and to publish about each a section of the book which shall be complete in itself. In such a method of reviewing progress there is a tendency to fill the allotted space with material that is neither new nor notable. The subjects in the "Medical Annual" are treated in alphabetical order, and at the head of each is found the name of the reviewer responsible for the compilation. Subjects in which much work has been done can have adequate space, and those in which workers have been marking time perhaps receive bare mention. A good deal of space is devoted, for example, to the medical aspects of flying. Bodily strains associated with flying are mentioned, environmental factors, height and manoeuvre at speed being discussed. Under the heading of flying and the individual, flying is discussed as it affects (a) service pilots and B-licence pilots, (b) A-licence pilots, (c) passengers, (d) invalids. There is a section on flying as a therapeutic measure. For the section on flying there are fifteen references to recent literature. In the section on hydatid cysts of the lung reference is made to the Hydatid Registry of the Royal Australasian College of Surgeons (it is wrongly called the Australian Hydatid Registry) and to the recent communication of K. Christie in *The Australian and New Zealand Journal of Surgery*. Under "New Growths of the Lung" reference is made to pneumonectomy in stages. Pregnancy and its disorders form an important section. As would be expected, there are many references to the use of sulphanilamides in various conditions. Professor R. St. A. Heathcote reviews the chemotherapy of bacterial invasion in an important article, which has 167 references to the literature. Diphtheria, measles and scarlet fever are dealt with by Dr. J. A. H. Brincker; he sets out the recent achievements in the prophylaxis and treatment of these diseases. Dr. Maurice Davidson reviews cystic diseases of the lung. Vitamins are mentioned in many different connexions—in relation to cataract, as a factor in mental disease, in relation to dietetics and in heart disease. On the surgical side one of the most important sections is that dealing with fractures, references being made to 27 contributions to the literature. The internal fixation of fractures is discussed and considerable space is given to fractures of the neck of the femur; the results of many surgeons, including T. King, of Melbourne, are mentioned. There is an important section on surgery of the blood vessels.

The list of interesting sections could easily be expanded; but this is not necessary. Sufficient has been written to show that this volume is well worth the attention of any practitioner, be he physician, surgeon, specialist or general practitioner. Perhaps the general practitioner will find it of most value, for he has such an enormous field to cover in his reading and, as a rule, has so little time at his disposal.

¹ "The Language of Gesture", by M. Critchley, M.D., F.R.C.P.; 1939. London: Edward Arnold and Company. Crown 8vo, pp. 128. Price: 5s. net.

² "The Synovial Membrane and the Synovial Fluid, with Special Reference to Arthritis and Injuries of the Joints" by D. H. Kling, M.D.; 1939. London: Baillière, Tindall and Cox. Medium 8vo, pp. 284, with 80 illustrations. Price: 25s. net.

³ "The Medical Annual. A Year Book of Treatment and Practitioner's Index", edited by H. L. Tidy and A. R. Short; 1940. Demy 8vo, pp. 650, with illustrations. Price: 20s. net.

The Medical Journal of Australia

SATURDAY, JULY 13, 1940.

All articles submitted for publication in this journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations and not to underline either words or phrases.

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Authors who are not accustomed to preparing drawings or photographic prints for reproduction are invited to seek the advice of the Editor.

AN INVITATION TO CHILDREN OF THE UNITED KINGDOM.

IN last week's issue of this journal readers were informed, first of all, that the Federal Council of the British Medical Association in Australia had, on behalf of the medical profession of the Commonwealth, cabled to the Parent Body offering to provide sanctuary for the duration of the war for a number of children of medical practitioners in Great Britain, and secondly, that the offer had been accepted. Members of the Branches desiring information were invited to communicate with Branch secretaries. The announcement was made by the General Secretary of the Federal Council just as the issue was going to press, and there was no time to comment on it. In this matter there can be no delay. On hearing of the proposal many will have found no difficulty in making up their minds what to do; for those who have not yet heard of it, and for those who are hesitant about making a decision, the present reference is made.

There is no need at this stage of the war to waste words on the dangers to which the children of Great Britain, in common with all other civilians,

are certain to be exposed in the type of aerial warfare at present being waged, apart altogether from the possible results of invasion. Moreover, it is well to remember that to keep a child from bodily injury is not the only objective. A child may pass unscathed through severe air raids or bombardment, may see homes wrecked and be brought face to face with death and desolation without suffering bodily injury; but it is certain to suffer a psychic trauma that will in all probability last as long as life itself. Even though the child lives in a place that is fortunate enough to escape air raids or other forms of attack and sees none of the enemy's depredations, constant fear of terrifying happenings cannot fail to have a bad psychological effect on the child mind. These considerations alone are sufficient to commend the Federal Council's scheme to the members of the British Medical Association in Australia; but there are other reasons why we believe that they will make every effort to take part in it. The members of the medical profession in the Commonwealth are bound by many ties to their *confrères* in the Old Country. Even as Australia is the child of Britain, so is Australian medicine sprung from British medicine—Australian medical schools were founded on the models of British schools, they were staffed by British teachers, and the British tradition has been handed down from parent to offspring. And there is a still closer family tie within the folds of the British Medical Association. This was made clear to Australia when the Parent Body came to Melbourne in 1935 to hold its annual meeting; and no member from the Commonwealth who has visited the Association either at its annual meeting in some part of the British Isles or at Tavistock Square, has come away without warmth in his heart from the welcome he has received, and without wondering how soon he will be able to repeat the visit. Again, Great Britain has been the Mecca of many Australians intent on post-graduate study, and all who have made the pilgrimage acknowledge Australian indebtedness to British teachers for their erudition, their ability to impart knowledge and their generosity in time and effort. Finally it is safe to assert that every Australian medical man or woman

who has visited Britain has received from British colleagues much kindness and hospitality, and will welcome the opportunity of doing something to show his or her appreciation and friendship.

The invitation of the Federal Council to the children of medical practitioners of Great Britain is not to be confused with the scheme for the adoption by Australian parents of orphan children from overseas, which is receiving so much prominence in the daily Press, and which, while utterly commendable, is beset by many difficulties and pitfalls. To offer sanctuary for the duration of the war to the children of colleagues in the Home Country is very different from the adoption of orphan children, perhaps of foreign nationality, of whose antecedents nothing is known. But all the same, the Federal Council's scheme must not be taken up without careful consideration. Many factors, such as the age of the child, its general education and religious training, will have to be considered. The Federal Council will no doubt set up machinery to deal with the scheme in all its aspects. In the meantime it is for medical practitioners to signify their willingness to participate with the least possible delay.

Current Comment.

THE DYNAMICS OF CROWD INFECTION.

It is a little humiliating to reflect that man, the masterpiece, when you regard him in the mass, differs little in his behaviour from a molecule of a gas, as it bumps about hither and thither amongst the other molecules, and that man in general obeys much the same sort of laws as the molecules of a gas obey. The analogy is one drawn by Lieutenant-Colonel A. G. McKendrick, who has made many contributions to medical mathematical science during the past thirty years.¹ It is true that the movements of a human being are not haphazard or predictable, but subject to individual will; still, according to a recent physical view, the same unpredictableness holds for individual atoms. In illustration of this, McKendrick points out that although we can estimate with reasonable accuracy the number of road accidents which will occur in a particular period of time, we cannot say which individuals will be hurt. Hence, if we get rid of the idea of wondering how one individual will behave and consider how a community will behave,

we find that laws emerge which are almost identical with those that apply to inanimate particles and almost as exact.

From this conception it is only a step to the application of the law of mass action to biological phenomena. The law of mass action states that the rate at which the chemical interaction of substances occurs is proportional to the concentration of the reacting substances; this is because the molecules must meet before they can interact, and the chance of their meeting is proportional to their concentration. Similarly, the chance of a phagocyte engulfing a bacterium in a given space is governed by the numbers of phagocytes and bacteria present. After the ingestion of bacteria by phagocytes has proceeded for a given period it is possible to calculate the probable numbers of phagocytes containing 0, 1, 2, 3, . . . bacteria respectively; if the observed numbers do not approximate to the calculated numbers one may be able to demonstrate such factors as increasing or diminishing appetite on the part of the phagocytes as ingestion proceeds. The mathematical considerations are similar when the epidemiologist is supplied with data of the number of houses in a locality which have harboured 0, 1, 2, 3, . . . cases of a particular disease and he is asked if from the figures he can tell whether infection has been distributed from a source acting at random or whether there is evidence of contagion within the houses.

The law of mass action is found by observation to govern the rate, which is not uniform, of the proliferation of bacteria in a nutrient medium, a process equivalent to the conversion of medium into bacteria. The growth of bacteria in broth is similar to the growth of leaven in a lump of dough, and this is stated in the Scriptures (Matthew, xiii, 33) to be analogous to the growth of the kingdom of Heaven. In other words, the parable enunciates the law which should govern the spread of an idea or an influence or of anything contagious or infectious amongst the members of a population; this law is inherently mathematical. McKendrick produces graphs to show that the spread of a plague and the dissemination of knowledge of the value of treatment for rabies take place in the same way as the growth of bacteria in a nutrient medium.

As he proceeds to more complex problems, McKendrick observes that the epidemiologist, like the physicist, has often to disregard many incidental features of his problem in order to resolve the principal factors into a readily appreciable and mathematical manœuvrable form, and it is the ability to abstract the essential from a mass of detail with confidence and success, he holds, which distinguishes the genius from the pedant. And so he applies the law of mass action again and assumes for the sake of argument that the rate at which new cases of an infectious disease appear in a community is proportional to the number who are ill and to the number who are susceptible; also that the number who die or recover is proportional to the number who are ill. McKendrick proceeds to the theoretical demonstration of the proposition that when a

¹ *Edinburgh Medical Journal*, February, 1940.

number of persons infected with communicable disease are introduced into a population free from the disease, the risk to which the latter is subjected depends upon the number of susceptible persons and that it is possible to define a threshold density of susceptibles; when the number of susceptibles is above the threshold there will be an epidemic, and when it is not there cannot be an epidemic. In an isolated community, as the number of sick increases the number of susceptibles is reduced, and when the number is reduced to the threshold level the epidemic reaches its peak and thereafter exhausts itself, for the chance that an individual who is sick will recover or die is greater than the chance of his infecting a new susceptible. The epidemic may thus be exhausted long before all the susceptibles are affected. When an epidemic dies out it is not necessary to postulate that those who escaped it must have been relatively immune or that an attenuation of the responsible microbe must have occurred. In a community which is constantly receiving fresh susceptibles by birth or immigration, a continuous process of disease is possible and we have endemic disease; successive little waves of the disease and the arrival of fresh susceptibles cause the number of susceptibles in the population to oscillate about the threshold level and the number of sick to oscillate correspondingly about the "endemic level".

The practical point which emerges from this concept, according to McKendrick, is the desirability of a high threshold density of susceptibles by whatever means this may be achieved. Each disease has its own threshold density; and any factor which reduces the period of illness, such as early death, early recovery or early segregation, raises the threshold and acts advantageously to the community. The threshold may also be raised by cutting down the chances of infection, whether this be done by measures reducing intercourse, infectivity or susceptibility. If this be done with sufficient energy, a very large population of susceptibles may be built up and kept free of serious epidemics. But such a community would be very unstable in that any relaxation of care would result in a sharp fall in the threshold level, and so a serious epidemic might occur.

We are perhaps often too ready, in studying the epidemiology of this or that disease, to become pre-occupied with the peculiarities of the disease in question. The objectivity of our studies and the clarity of our thought are much enhanced when we are enabled to see our epidemiological problems in the light of the broad principles of mathematics and the laws of dynamics, which govern alike man and molecule.

HEALTH TALKS: A NEW PUBLIC SERVICE.

On the evening of Wednesday, July 3, 1940, the Honourable H. V. Thorby, Minister of Health of the Commonwealth, introduced the "B.M.A. Spokesman" to listeners throughout Australia on the national

network of the Australian Broadcasting Commission. The "B.M.A. Spokesman" then spoke on "Medicine's Forward March", thus inaugurating a series of broadcast talks, "The Highway to Health", arranged by the Department of Medical Sociology and Research of the New South Wales Branch of the British Medical Association. Readers will remember that the establishment of this department was the subject of a leading article in this journal in April last. The sessions will be continued every Wednesday at 8 o'clock p.m. The title of the talk for July 10 is "Keeping our Soldiers Fit in War", and for July 17 "Adiposis or the Weight for Age Handicap". Members are asked to bring these talks to the notice of their patients and friends; it is suggested that a notice may be placed in waiting rooms setting out dates and subjects. Moreover, criticism and suggestions from members will be welcome. Already appreciation both of the material and of the method of delivery has been received, together with encouragement, in the hope that the new effort will be of value.

THIS YEAR'S "MEDICAL ANNUAL".

In another place in this issue will be found a review of the "Medical Annual" for 1940.¹ This book, which is described as "A Year Book of Treatment and Practitioner's Index", has been issued for fifty-eight years. It is edited by Letheby Tidy and A. Rendle Short, both of whom are well known to readers of medical literature. The contributors, that is, the reviewers of the several sections, acknowledged experts in their respective spheres, number thirty-five. In the past we have urged medical practitioners to buy this book, for we know of no single volume that is likely to prove of greater value to them. Those who know it will need no urging; for those who have not yet made its acquaintance we can only repeat the advice that they should form the "Medical Annual" habit. This habit is an addiction that can bring no regrets.

FURTHER "BAKER" KODAK BENEFACTIONS.

THE tenth annual distribution of £14,500 to charitable and other organizations in Australia from the income of the charitable fund of the "Baker" Kodak Benefactions has been made, and this brings the total distribution in the past ten years to £80,000, derived principally from dividends of Kodak (Australasia) Proprietary Limited. The Baker Medical Research Institute has received £57,800, while numerous Australian hospitals have also participated in these benefactions. As readers are aware, many important contributions to medical science have come from the Baker Institute.

¹ "The Medical Annual. A Year Book of Treatment and Practitioner's Index", edited by H. L. Tidy and A. R. Short; 1940. Demy 8vo, pp. 650, with illustrations. Price: 20s. net.

Abstracts from Current Medical Literature.

SURGERY.

Sweating Function of Transplanted Skin.

H. CONWAY (*Surgery, Gynecology and Obstetrics*, December, 1939) discusses the sweating function of transplanted skin, and presents views based on the observation of 75 cases. It is pointed out that sweat glands are more numerous in some areas of the body than in others, so that the choice of a donor area will necessarily influence the ultimate results. Grafts so thin as to be cut at a level superficial to the sweat glands, such as Thiersch grafts, cannot be expected to function. The bed on which the graft is laid will have a modifying influence, depending on its vascularity. Conway describes a method for investigating the sweating response; he found by its use that sweating occurred in varying degrees in all types of graft except those done by the Thiersch method.

Appendicostomy for Ulcerative Colitis.

G. F. CUSHMAN AND A. R. KILGORE (*The Western Journal of Surgery, Obstetrics and Gynecology*, December, 1939) discuss the treatment by appendicostomy of chronic ulcerative colitis. The operation of appendicostomy was first described by Weir in 1902, and the authors review the changing favour with which its use as a therapeutic measure has been regarded. They stress the fact that appendicostomy is an operation of little risk, devoid of the major unpleasant aspects of ileostomy, and conserving rather than losing fluid and salts. Further, the operation does not interfere with diagnostic studies or with later medical or surgical treatment if found necessary. The authors advocate the strict avoidance of antiseptics or astringents in washing out the bowel. They quote Lockhart-Mummery in support of this view, and recommend the use of either tap water or normal saline solution. The histories of five patients with ulcerative colitis who were treated by appendicostomy are given.

Results of Gastro-Enterostomy for Peptic Ulcer.

R. E. CHURCH AND J. W. HINTON (*Surgery*, May, 1940) report the results of gastro-enterostomy in 106 cases of peptic ulcer. The patients were observed for post-operative periods which averaged 7.1 years. They were seen by the authors at intervals of three months and were examined radiologically at least every six months. The authors emphasize the continuity of the follow-up system, and claim that inferences

drawn are in consequence more reliable. The series comprised 96 males and 10 females, and the average body weight was 10 stone. Symptoms had been present before operation for an average of 5.6 years. Of the ulcers, 92% were found in the duodenum and 8% in the stomach. The factors which had precipitated operation were found to have been, in order of frequency, uncontrolled pain, obstruction, hæmorrhage and perforation. There were no cases of malignant degeneration. On analysis of the end-results it was found that 25% of the patients were cured and 29% received benefit; 46% received no relief or became worse; 19% of the whole series developed anastomotic ulcers. The authors consider that their results do not present so favourable a view of the operative procedure of gastro-enterostomy as that generally encouraged by other writers. They attribute this fact, together with their high incidence of anastomotic ulcer, to their adoption of a longer follow-up period.

Shock.

R. D. CRESSMAN AND A. BLALOCK (*The American Journal of Surgery*, December, 1939) discuss the prevention and treatment of shock. They emphasize the fact that all cases of shock are not explainable by one theory, and that attempts to do so result only in confusion and in illogical treatment. Acute circulatory failure is classified into three groups, and in any particular case the recognition of the group into which it falls will be essential for efficient treatment. Thus when shock is due to hæmorrhage and vaso-constriction has already occurred, it is useless to give ephedrine or adrenaline. The authors consider prevention of shock from surgical operations, and direct attention to those factors, such as dehydration, which render the patient more susceptible. In the treatment of established shock the relative merits of various fluids for intravenous administration are examined. These include saline solution, glucose solution, gum-acacia solution, blood, lymph serum and ascitic fluid.

Septicæmia.

FRANK L. MELENEY (*The American Journal of Surgery*, December, 1939) considers briefly the concept of surgical septicæmia and the development of various types of scalp infection. He recommends that blood culture should be attempted in any case of persistent or intermittent fever, and if no growth occurs, the attempt should be repeated several times. The identification of the organism may unmask an unrecognized focus, through the known predilections of different bacteria. Streptococcal septicæmia, for example, is often associated with otitis, cellulitis and tenosynovitis; staphylococcal septicæmia with carbuncles, osteomyelitis and well-localized abscesses generally. The

author comments on the great power of the blood and the vascular system in disposing of infection. In cases of septicæmia the responsibility of the surgeon is obvious. He must find and treat the distributing focus or foci by excision, drainage or proximal ligation of suppurating thrombosed veins. He must also use all other available means for the treatment of the focus and the destruction of organisms in the focus and in the circulating blood. The author recommends that if susceptibility to bacteriophage can be proved, it should be given in repeated doses in staphylococcal septicæmia. Bacteriophage, if potent, should also be used with *Bacillus coli* septicæmia. Sulphanilamide and sulphapyridine can be used in conjunction with bacteriophage and do not interfere with its action. Bacteriophage is of no use in streptococcal infections. The author has found serotherapy disappointing, but considers that it should be tried in staphylococcal septicæmia. Blood transfusions are of use in the treatment of septicæmia only when red cells are lost, except occasionally when the donor's serum may be found to have a high opsonic index for streptococci.

De Quervain's Disease.

A. W. DIACK AND J. P. TROMMALD (*The Western Journal of Surgery, Obstetrics and Gynecology*, November, 1939), in reporting five cases of de Quervain's disease encountered in twelve months, express the opinion that the condition is probably often unrecognized, especially as it is mentioned in few text-books. In its pathology the disease consists of a stenosing tendo-vaginitis involving the *abductor pollicis longus* and *extensor pollicis brevis* tendons and sheaths where these lie on the radial styloid. The clinical feature is pain over the styloid radiating into the thumb and up the arm, and often disabling in degree. Treatment is simple and satisfactory, and requires only the longitudinal incision of the fibrosed sheath.

Radium and Breast Carcinoma.

J. PATERSON ROSS (*The British Journal of Surgery*, October, 1939) describes in a Hunterian Lecture the results of some investigations into the effects of radium upon carcinoma of the breast. Seventy-two patients formed the basis of the study, in which treatment was carried out by the insertion of radium into the breast and the neighbouring gland area; this was followed by a conservative removal of the breast and the axillary contents after a period of either three or six months. Histological examination was made of biopsy material obtained at the time of removal of the radium needles and of the tissue excised at the subsequent operation. Clinical follow-up observations were carried on for five years after treatment. The author found that the growths showed considerable

variation in their histological appearance and in their response to irradiation. He concludes that radical mastectomy is the safest treatment for carcinoma in its early stages, but that in all but the early stages as good or better results may be obtained by radium accompanied by excision of the primary growth whenever this is possible.

Metal Plates in Arthroplasty.

W. C. CAMPBELL (*The American Journal of Surgery*, March, 1940) discusses the interposition of metals in the performance of arthroplasty, instead of the more usual *fascia lata* or other living materials. The method, which was tried and abandoned over fifty years ago, was revived by Smith-Petersen, who has secured good results by using metal caps in arthroplasty of the hip joint. In one patient the development of a fibro-cartilaginous lining in the joint was later demonstrated. The metal employed was the alloy vitallium, and, encouraged by Smith-Petersen's results, the author used a similar method in treating two patients with ankylosis of the knee. A plate of vitallium was fashioned to replace the femoral articular surface. The author was disappointed with the range of movement obtained, which was less than after previous operations in which he used *fascia lata*; but he thinks an error may have been made in creating less than the customary joint space of three-quarters of an inch. He thinks that the method deserves further investigation and proposes to make another report after an extended trial.

Fat Embolism.

R. I. HARRIS AND T. S. PERRETT (*Annals of Surgery*, December, 1939) report a fatal case of fat embolism and describe some experimental work performed on the same condition. The patient, whose death occurred four days after he sustained a fracture of the femur, manifested a progressive fall in haemoglobin. At autopsy the lungs were found to be consolidated and resembled those in a stage of red hepatization. Microscopic examination revealed fat embolism and relatively few leucocytes; and the authors concluded that the fall in haemoglobin was due to the intense haemorrhagic exudate in the lungs. They suggest that the similar fall in haemoglobin seen after many bone injuries and operations may, in the absence of evidence of blood loss, be accounted for by loss of red cells in exudate due to fat embolism. They conducted some experiments by injecting human fat into rabbits, presumably by the intravenous route. The minimum lethal dose was found to be 0.9 cubic centimetre per kilogram. Human fat was then hydrolysed and the resultant glycerol and fatty acids were administered. With these the minimum lethal dose was 0.07 cubic centimetre per kilogram, or less than one-twelfth that of neutral fat. The authors suggest that a lipase may hydrolyse the

fat in human victims and thus increase its irritant effect. For the occurrence of fat embolism they postulate three essentials, the presence of fat liberated from adipose tissue, patent wounded veins, and a pressure sufficient to force the fat into the veins. In operations on and injuries to bone these essentials can be satisfied.

Gunshot Wounds of the Chest.

F. T. RANSON (*The Journal of Thoracic Surgery*, February, 1940) reviews briefly the history of military chest surgery and offers some observations and conclusions regarding gunshot wounds of the chest, based on experience gained at Shanghai during hostilities in 1937. He stresses the importance of applied physiology in the understanding and treatment of such conditions as open pneumothorax with mediastinal flutter, tension pneumothorax, cardiac tamponade *et cetera*. Cases of tetanus and gas gangrene were relatively rare. The author attributes this to the Chinese custom of using for fertilizing purposes human excreta rather than horse manure. The treatment employed in 150 cases of gunshot wounds of the chest is discussed, and a new method of ligating the subclavian artery is presented.

Renal Trauma.

G. C. PRATHER (*The Journal of the American Medical Association*, January 20, 1940), from an experience of twenty cases, discusses renal injuries. Of these, half were classified as contusion of the kidney and did not require operative intervention. The leading features in these cases were absence of shock, no fall in blood pressure nor rise in pulse rate in the first forty-eight hours, no increase in tenderness in the flank nor spasm of the muscles of that region, and good visualization of the injured kidney in the excretion urogram. Subcapsular rupture occurred once. The symptoms and treatment are similar to those for contusion. Lacerations fall into two groups. Patients in the first group include those who are gravely shocked and who probably die within a few hours of injury. The two such patients in this series had gross lacerations with widespread haematoma. The second group comprised eight patients who were admitted to hospital in better condition. All had immediate and severe pain in the injured loin and abdominal tenderness. Spasm of the muscles of the injured loin was always present. The two patients who had a bulging flank died within five hours. Increasing pulse rate was observed in only three of the remainder. Obviously this is not a reliable guide to the time for operation, but a rising pulse and falling blood pressure indicate the need for early intervention. Increasing pain and tenderness in the loin, and especially in the lower abdominal quadrant, or irritation of the psoas muscle

indicates perirenal extravasation. Excretion urography is often diagnostic, but may be misleading when the appearance is within normal limits; but lack of visualization is suggestive of severe injury. The author believes that the individual surgeon who can observe the patient more or less constantly over the first few days should determine whether to operate and when.

The Clinical Use of a Synthetic Substance Resembling Vitamin K.

J. G. ALLEN AND O. C. JULIAN (*Archives of Surgery*, May, 1940) report the clinical use of 2-methyl-1,4-naphthoquinone, a synthetic substance resembling vitamin K. They point out that in 1939 McKee and Dolsy and their co-workers showed that vitamin K has a quinoid structure. This led to the investigation of the anti-haemorrhagic value of many of the quinones in experimental hypoprothrombinemia. Of those investigated, 2-methyl-1,4-naphthoquinone and 2-methyl-3-hydroxy-1,4-naphthoquinone were found to possess the greatest antihaemorrhagic activity. The authors report the response to the administration of 2-methyl-1,4-naphthoquinone of ten patients suffering from hypoprothrombinemia due to various causes. Each patient was given 0.325 gramme of bile salts with each two milligrammes of the drug, except in two instances in which the patients also received a water-soluble sulphonated derivative of the naphthoquinone. The "typical response" to the drug is illustrated by the chart of a patient who eventually died. The patient was bleeding from the gingival margins and had many cutaneous ecchymoses associated with obstructive jaundice. Eight hours after the first administration of the drug the bleeding ceased and no more ecchymoses appeared. Three types of response are recorded. The first, recorded in five instances, is that referred to as typical; in these instances the low level of plasma prothrombin was produced by defective absorption of vitamin K, attributable to the absence of bile from the intestinal tract. The second type of response was the sluggish type. In two instances there was no response; both patients suffered from advanced cirrhosis of the liver associated with chronic alcoholism. The authors suggest that in these instances the activation of prothrombin by the naphthoquinone may have been impaired by the advanced hepatic cirrhosis. The authors state that the results obtained by them with the naphthoquinone compare favourably with those obtained by the administration of vitamin K concentrate to patients deficient in prothrombin. However, until it is possible to assay pure natural vitamin K in terms of its naphthoquinone content, it will not be possible to make accurate comparisons between the natural vitamin and the synthetic preparation.

Special Articles on Psychiatry in General Practice.

(Contributed by request.)

II.

ÆTIOLOGY: PSYCHOLOGICAL FACTORS.

General Considerations.

In the present controversial state of theories as to causation in mental disorders any presentation is likely to be inadequate. The viewpoint that will be propounded may at least claim pragmatic value and places psychiatry on a biological foundation. Such a viewpoint may perhaps appear somewhat novel to those of an older generation who wrestled with the problem of mind *versus* body, and whose psychology was the product of philosophy rather than of the observation of mankind pursuing its multifarious activities. We may conceive of mind as a certain kind of function, the total behaviour of a certain individual. Mind or mentation is a function of the brain and is concerned with the adaptation of the individual to his environment. We can know "mind" only through its activity, and, moreover, we can treat only its physical instrument, the body. Mental disorder is a breakdown in adaptation, and the various clinical syndromes differ according to the constitutions and ages of the personalities involved and the various environmental stresses which have to be met. Mental disorders are the product of a complexity of factors which may be classified as follows:

Internal:

Innate constitution.

Changes associated with various ages and the psycho-physical adjustments which have to be made.

External:

Physical } Influences, both remote and recent,
Psychological } brief or prolonged.

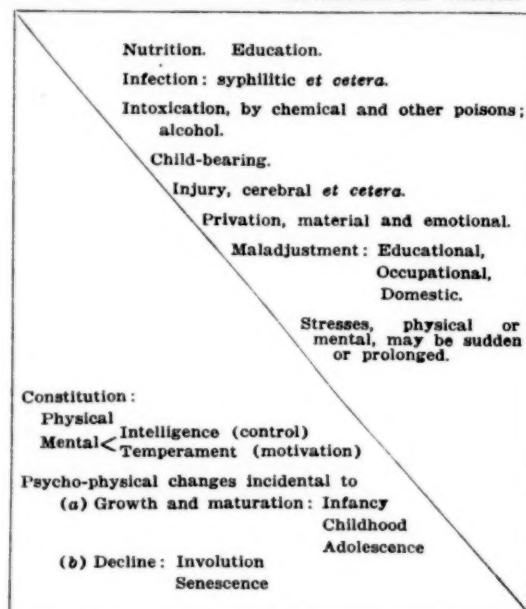
An adequate evaluation of the different factors which have contributed towards the mental state of an individual at any given time, is possible only with a sufficiently detailed life history. "Only thus", to quote Griesinger, "can we succeed in grasping at their beginnings those fine threads which have ultimately entwined themselves into delirious conceptions; only thus can we, in many cases where insanity appears suddenly and apparently without notice, recognize the far-back commencement of the preparation for the disease, and the almost mathematical necessity of its occurrence." (Griesinger, "Mental Pathology", New Sydenham Society, 1867.)

Seldom, if ever, can we be satisfied in invoking any single factor as the cause of a mental disturbance, except perhaps in a court of law. It is even doubtful whether we can regard the spirochete as any more than a major cause of *dementia paralytica*. In treatment we have to ask two main questions: "What material have we to work on?" and "What factors can we eliminate at once for the alleviation of symptoms, and later for the prevention of recurrence?"

Heredity.

Since heredity is not a controllable or remediable factor, little need be said about it, and that with uncertainty. One must accept the fact that some families are excessively loaded with psychopathic members. In some instances manio-depressive states predominate, while in others psychopathy in the various members is expressed as delusional states, eccentricity, alcoholism, mental deficiency, presenile dementia or epilepsy. In one mental syndrome alone, Huntington's chorea, is there a direct transmission from parent to child, with a probability that 50% of the offspring will eventually develop the condition. Nevertheless we must recognize that an hereditary background may be ascertained in most cases of manic-depressive psychosis and *dementia præcox*, and frequently in epilepsy and mental deficiency. Often enough we are

ENVIRONMENTAL FACTORS.



HEREDITARY AND INBORN FACTORS.

quite unable to determine how far a condition is truly hereditary (affection of the germ plasma) or congenital or developmental, that is, resulting from noxious agents operating after conception or after birth.

Persons are born with predispositions only, and defects become manifest only when there is some complementary condition in the environment. Hence physical and mental stresses may bring to light a latent weakness. Just as persons vary in their susceptibility to infections and toxins, so may they prove specially vulnerable to certain psychological stresses. The sensitive individual continues to make a satisfactory adjustment until some failure, which, instead of proving to be merely trivial, strikes at the very foundations of his personality, when some morbid reaction takes the place of normal compensations.

Personality.

The study of character and temperament in the individual helps us to decide how far mental symptoms are long-standing or constitutional, to what extent they are, as is so often the case, exaggerations of constitutional trends, or whether they amount to a profound change in personality. It is also of importance to get some idea of what is our patient's normal state, so that we may know what is the best that we may expect from treatment. For example, a person may recover from an attack of melancholia, but will continue to be the chronic worrier that he was before the attack. In some cases, and more particularly in the neuroses, it is possible to give a patient such an understanding and insight into certain symptoms that he can correct or control his jealousies, petty irritations or lapses of memory. With his essential background of a biological and medical training the general practitioner needs to have at his command no great amount of systematic psychological knowledge to intensify his power as "guide, philosopher and friend" to his patients.

Numerous guides to the study of personality have been drawn up, notably those of Hoch and Amsden, Floyd H. Alport, Kretschmer, and the detailed biographical record devised by Adolf Meyer. The life story obtained from the patient, together with information obtained from friends and relatives, has long been regarded by the psychiatrist as the most valuable means of getting an understanding of the patient's personality. The various

"tests" of temperament which psychologists have put forward are far less reliable than the history and observation of how the patient reacts in everyday life.

The following scheme is offered, not so much for the comprehensive study of personality as for the elucidation of the more common morbid features and of the situations which most often prove a difficulty to the neurotic. The form in which questions should be put has purposely been left to the discretion of the physician. In some instances it may be helpful to the patient to consider the scheme for himself.

Intelligence.

- School and academic record.
- Ease of learning.
- Special abilities or disabilities (for example, literary, linguistic, artistic, mechanical).
- Capacity for planning and organization.
- Administrative capacity.
- Ability to profit by experience.
- Distinguish between acquisition of knowledge and the urge and capacity to apply it.

Formal intelligence tests (especially Binet-Simon). While these are of great value during the school age, in the adjustment of the milder forms of mental deficiency in the adult they are of less importance. "For all practical purposes of life social intelligence wins over abstract intelligence, ten to one. Abstract intelligence knows what to do, but social intelligence knows how to get it done."

Mood and Temperament.

(In addition to estimating the patient's habitual or constitutional affective type (temperament), inquiry should also be made into the causes of variations in mood, for example, what situations appear to precipitate phases of irritability or depression. The patient should also be asked what means he adopts to correct any anomalies or exaggerations of his affect.)

- Stable.
- Cyclothymic.
- Optimistic, exuberant, enthusiastic.
- Depressive, worrying, serious, brooding.
- Phlegmatic.
- Irritable, touchy, explosive, prone to temper tantrums.
- Anxious.

Energy.

- Energetic or lazy in mental and physical work and recreations.
- Constant, sustained or spasmodic energy.
- Cyclic variations in energy.
- Useful or wasteful expenditure of energy.
- Does the patient "put his heart and soul" into tasks, or is his performance perfunctory?

Occupation.

- Economic history.
- Satisfaction with vocation.
- Ambition, how far attained.
- Attitude towards colleagues, superiors, subordinates.
- Fatigability.

Recreation.

- What is the patient's choice of recreations?
- How far do they satisfy physical, mental, social and other cravings?
- Are the recreations mainly intellectual or physical?
- Does the patient crave for excitement in sport and recreation?

Self-Esteem (Ego Tendencies).

- Is the patient self-depreciatory (inferiority complex)?
- Sensitiveness to opinions of others.
- Self-pity. Hypochondria.

Egotism. Excessive self-satisfaction in regard to mental and physical qualities, appearance, property, position *et cetera*.

With what degree of comfort and success can the patient accept responsibility?

Does he tend to leave responsibility to others? From indolence or lack of confidence?

How far can he tolerate a joke at his expense, a blow to his prestige and self-esteem?

Sociability.

- Friendly or aloof.
- Readiness to make friends. Easiness in company.
- Shyness, sensitiveness, preference for own company.
- Preference for what age, sex and type of companionship.
- Interests in common with associates.
- General attitude towards friends and strangers.
- Reticence, or openness towards others.
- Leader or led. Instigator or imitator.
- Engagement in social activities; underlying motives.
- Sympathetic towards others, or detached.

The Family.

- Attitudes towards other members of the family.
- Special attractions and antagonisms.
- Dominance over or dependence upon other members of family.
- Period of emancipation, how met.
- How far does the patient feel independent?
- Sense of obligation towards rest of family.

Sex.

- Development of sex interests and cravings and their subsequent history.
- Auto-, homo- and hetero-sexual trends.
- Perversions.
- Engagement. Marriage.
- Disappointments and bereavements: reactions thereto.
- Marriage. Attitude towards partner.
- Difficulties and dissatisfactions, sexual and general.
- Attitude towards children.
- Sex cravings and satisfactions: variations in strength of libido. Adolescence. Involution.
- Conflicts over sex cravings and frustrations.
- Prudery: "old maid" attitudes.
- Special difficulties: revulsions, fear. Are such attitudes traceable to special experiences?
- What part does "sex" play in the patient's daily life, in phantasy or in fact?

Moral Sense.

- Regard for the rights of others.
- Antisocial tendencies and acts.
- Obedience to conscience or to the law.
- Probity, reliability.

Rule of Life.

- How far has the patient developed a philosophy of life?
- How far is he dependent on religion or philosophy?
- How far do these satisfy any special needs?
- Attendance at church and engagement in church activities, motives.
- Special religious or ethical conflicts.
- Has the patient ever undergone any radical change in his attitude towards religion or ethics?
- How far has he attempted to remedy any defects and to overcome difficulties over matters of conscience, and with what success?

Illnesses.

- Patient's reaction to earlier and recent physical and mental injuries and illnesses.

Traits Calling for Further Investigation.

Sentimentality, soft-heartedness.
Undue suggestibility, trustfulness and passivity.
Irritability and quarrelsomeness.
Proneness to feel slighted or to develop grievances.
Sensitiveness, self-consciousness.
Suspicion and jealousy.
Undue scrupulosity and attention to trivial details.
Timidity, embarrassment.
Phantasy building and day dreaming.

In the symptomatology of mental disorders we so often see the exaggerations, sometimes the reversals, of constitutional temperamental traits. This has led to numerous attempts to define various types of "prepsychotic" personalities, temperaments and dispositions, which, however, like all types, fail to fit the majority of cases. Yet in any given case of neurosis or psychosis it is of value to try to determine what temperamental anomalies are part of the patient's usual or "normal" make-up.

Syntonic or Cyclothymic Temperament.—The syntonic or cyclothymic temperament forms the background of the manic-depressive psychosis. There may be mild circular mood swings, alternating phases of exhilaration and activity, alternating with periods of depression and reduced effort, not amounting to any serious impairment of efficiency, and in all probability unnoticed by the patient's friends. Or the history may point to a temperament which is constantly cheerful, kindly, energetic or depressive. Syntonics are emotionally adapted to their social environments, and comprise the good mixers, realists and people with good social and practical sense.

Schizoids and Morbid Introverts.—The prepsychotic personality in *dementia præcox* has been summarized by August Hoch as follows:

We find in *dementia præcox* persons who have not a natural tendency to be open and to get into contact with environment, who are reticent, seclusive, who cannot adapt themselves to a situation, who are hard to influence, often sensitive and stubborn, but the latter more in a passive than an active way. They show little interest in what goes on, often do not participate in the pleasures, cares and pursuits of those around them; although often sensitive, they do not let others know what their conflicts are, do not unburden their minds, are shy, and have a tendency to live in a world of fancies.

In contrast to the affectively rich syntonics, schizoids are cold idealists, often of a passive type, dreamers and visionaries, who are only too ready to retire into a world of their own creation. If active and energetic, they may be creative in art, literature, science, or leaders in their social group, achieving success by sheer tenacity and relentless pursuit of their aims rather than by compromise and through the goodwill of their fellows. Kretschmer numbers the "chilly fanatics and despots, cold and calculating diplomatists" amongst the schizoids.

The Paranoid Disposition.—The paranoid disposition is closely related to the schizoid. Primary feelings of uncertainty and lack of confidence, the "inferiority complex", are apt to promote jealousy, suspicion and grudges. Faddishness and crankiness, and a proneness to take up "lost" and unpopular causes foster an exaggerated egotism and may precede actual megalomania. Clearly there is no well-defined boundary between some of these features and delusional insanity, and in most cases we find that the paranoid disposition has been becoming more pronounced over a period of years before the patient comes under medical notice for some aberration of conduct.

Epileptic Character.—Epileptics of many years' standing who derive only partial benefit from medicinal treatment, tend to become egocentric, hypochondriacal, selfish and childishly susceptible to flattery. Maudlin sentimentality and religiosity are other qualities which may be quite prominent. In addition, irritability, explosive tempers and cruelty are not uncommon, at any rate amongst epileptics committed to institutions. It is an open question how far these various qualities are primary or how far secondary, and really of the nature of a mild dementia. This so-called epileptic temperament, and

more particularly explosive irritability, have been noted in the families of epileptics in members who have not themselves had minor or major fits.

Hysterical Personality.—The hysteric is emotionally, sometimes also intellectually and physically, immature. Hysteria is a neurosis of subnormal intelligence, whereas the anxiety neurosis occurs as often in the intellectually superior. Kretschmer has attempted to show the primitive nature of hysterical manifestations and has made two useful groupings of "hyponoic" and "hypobulic" mechanisms. The hyponoic features include heightened suggestibility, dissociative dreams and twilight states and emotionally determined memory defects, also defective moral sense. Hysterics lack a sense of responsibility, and in fact their shameless assumption of symptoms may border on wilful malingering. Fits, faints, spasms, contractures and paralyses come into the "hypobulic" category. In the face of difficulty the hysteric readily regresses to one or other of these lower level responses. Puberty and adolescence are stressful periods for the hysteric, after which a delayed maturity may see a recession of the hysterical tendency. But marriage, with its attendant responsibilities, will often lead to a renewed eruption of symptoms.

Neurasthenic Personality.—Neurasthenic persons have a subnormal reserve of energy, so that they can live with comfort only a "low-gear" existence. This defect may be apparent from childhood, but more often the increasing responsibilities of adolescence and of adult life bring latent weakness of this sort to the fore. The patient learns to protect himself against (for him) excessive demands. Such self-imposed limitations are not incompatible with concentrated effort in a restricted field. The morbid fatigability may be a response either to mental or physical effort, or to both; it may be experienced in anticipation of or in response to certain situations (psychologically determined symptom). The neurasthenic disposition may be associated with an asthenic physique and poor respiratory and cardio-vascular reserve.

Anxious Personality.—Here again the disposition may be regarded as a neurosis in a milder but chronic form. What we term the neurosis is an exacerbation of certain symptoms precipitated by physical or mental stress. The essence of the anxious disposition is the tendency to worry and to anticipate trouble. In some instances there is a liability for some system, for example, the gastro-intestinal or the cardio-vascular, to over-react under the stress of emotion. Disturbed sleep, with unpleasant dreams, irritability, touchiness and restless feelings are other common features. The anxious disposition may be said to become a neurosis when one or other of these tendencies causes discomfort to such a degree and such impairment of the patient's adaptation to his social environment that he is driven to seek means of relief. The anxious disposition is a common constitutional background to involutional melancholia.

The Obsessional Personality.—The essential feature of an obsession is the proneness to think, feel or act under a sense of compulsion (imperative ideas). The neurosis develops in persons who are over-conscientious and over-scrupulous, and who display an excessive devotion to duty. Over-thoroughness and an uncomfortable orderliness are reactions to or associated with a sense of uncertainty and inadequacy. Sometimes the patient tells us that for years, perhaps from childhood, he has been prone to pacts. "If I do (or do not) do this thing, something will (or will not) happen." The Freudian school traces all these obsessional tendencies to a sense of guilt over the performance of pleasurable but forbidden actions. The obsessional tendency is found in persons of good, even exceptionally high, intellectual status. Whether or not the Freudian explanation is to be accepted, the obsessions may be regarded as evidence of a reduced capacity to withstand stress, more particularly the sort of stress involved in the facing and acceptance of responsibility and the maintenance of adequate social adaptations.

W. S. DAWSON, M.D., F.R.C.P., Professor
of Psychiatry, University of Sydney;
Honorary Psychiatrist, Royal Prince
Alfred Hospital.

Post-Graduate Work.

LECTURES IN PÆDIATRICS IN SYDNEY.

THE New South Wales Post-Graduate Committee in Medicine has arranged a course in pædiatrics, to be held at the Royal Alexandra Hospital for Children, Sydney, in July, 1940. The programme is as follows.

July 29, 1940.

- 9.30 a.m. to 12.30 p.m.—"Nutritional Disorders in Children", lecture-demonstration: Dr. L. H. Hughes.
- 2 to 3 p.m.—Demonstration of surgical cases: Dr. H. S. Humphries.
- 3 to 3.45 p.m.—Demonstration of methods of applying plaster of Paris: Dr. Norman Little.
- 4 to 5 p.m.—"Treatment of Intussusception and Pyloric Stenosis": Dr. P. L. Hipsley.

July 30.

- 9.30 a.m. to 12.30 p.m.—"Anæmia in Childhood": Dr. L. H. Hughes.
- 2 to 3 p.m.—Demonstration of splints and surgical appliances: Dr. R. L. Stephen.
- 3 to 3.45 p.m.—"Treatment of Hare Lip and Cleft Palate": Dr. Sheddon Davis.
- 4 to 5 p.m.—"Acute Osteomyelitis and Infective Arthritis": Dr. H. G. Humphries.

July 31.

- 9.30 a.m. to 12.30 p.m.—Medical ward rounds: Dr. L. H. Hughes.
- 2 to 3 p.m.—"Tuberculous Disease of the Spine and Hip": Dr. Keith Smith.
- 3 to 3.45 p.m.—"Treatment of Inguinal and Umbilical Hernia and Undescended Testis": Dr. L. G. Tait.
- 4 to 5 p.m.—"Treatment of Empyema": Dr. C. Wesley.

The fee for this course will be three guineas. Applications for registration, accompanied by a remittance for the amount of the fee, must be made to the Secretary, the New South Wales Post-Graduate Committee in Medicine, the Prince Henry Hospital, Little Bay.

Correspondence.

THE MEDICAL PROFESSION AND THE WAR.

SIR: I wish to make one comment with reference to the remarks of Major-General Downes, as published in THE MEDICAL JOURNAL OF AUSTRALIA of June 15, which remarks, incidentally, did not have the prominence they warranted.

Major-General Downes refers to the obvious advantages of youth in respect to medical officers in the forces. However, there is one aspect that should not be forgotten: this war will not soon be over, for an early ending would only mean disaster, as in the case of France; it is necessary to be prepared for a long and arduous struggle.

For this reason it must not be overlooked that there are several like myself, who, although realizing the vast differences between this war and the last, have had some useful experience and training and who still have a year or so of useful activity that should not be wasted, and I ask that we be taken now whilst we still have capabilities and qualities that can be used, and thus allow a little time for training of the younger men to follow on.

Again, should the worst befall one of us, it would be better for the country than losing a younger man with his life's work ahead.

Although my next birth anniversary will be my sixtieth, I know that I can face a campaign as well as many of my

younger colleagues, and I have less to lose; I have had training in army medical corps work, and it is a pity to take the young men when we are available, and thus to lose the value of the work that is still in us, for it is a national waste.

Referring to the statement on page 843 that "most of the best surgical and medical work in the last war was done by those under or just over thirty years of age", I did see both surgical and medical work in the last war and I was forced to the conclusion that in war surgery particularly maturity of judgement is essential; the greater the rush of work, the more valuable are knowledge, experience and judgement.

Yours, etc.,

Brisbane,
June 26, 1940.

ERNEST CULPIN.

THREADWORMS.

SIR: Recently there have appeared suggestions for the cure of children suffering from this trouble. I have been amazed that threadworms should be thought worthy of such drastic treatment. Threadworms are fairly common in Queensland, but I have never seen them to cause serious symptoms. Perhaps in other lands and under other conditions they may be more harmful; but I write only of what I know. Any child suffering from them may be cured by simple domestic management under medical supervision.

It is necessary to know that the *Oxyuris* cannot propagate in the bowel; it must emerge to lay its eggs, usually in the neighbourhood of the anus. This emergence causes the well-known itching of the seat at bed-time. The eggs have to be swallowed and pass through the stomach before they develop. Threadworms, like diphtheria bacilli, are spread by children's hands. Probably the infestation is widespread; but casual infection with a few ova passes unnoticed except in rare instances. Whether the child becomes heavily infested depends upon whether he is a self-infector. Self-infectors are small children who put their fingers into their mouths, or older children who bite their nails, under which lurk the ova. If the passage of ova from the anus to the mouth is prevented, the worms die harmlessly after they have emerged from the bowel. Others besides myself have heard complaints by mothers that their children have been treated, perhaps more than once, by drugs which have expelled numbers of worms, and yet after three months their children were troubled as much as before.

The eradication of threadworms is a helminthological and not a therapeutic problem. Its success depends mainly on the advice given by members of our profession. The enclosed leaflet, which I hope you will publish, was issued (I forget how many) years back, after it had been endorsed by Dr. Heydon, helminthologist at the School of Tropical Medicine, Townsville, and now, I believe, on the staff of the School of Hygiene and Preventive Medicine in Sydney.

Yours, etc.,

Brisbane,
June 22, 1940.

A. JEFFERIS TURNER.

Threadworms.

Children with threadworms generally suffer from an itchiness at the seat, especially at bedtime. This may make them restless and prevent them from going to sleep. The itchiness is caused by the worms coming out of the anus and crawling about. More serious symptoms from threadworms are extremely rare in Queensland. "Picking at the nose" is not a sign of worms.

The only way to be sure that a child has threadworms is to see them in the motions. This is not difficult. They are about the size of cotton thread, about half an inch long, and are probably alive and wriggle. All sorts of

things in the motions, for instance the stringy parts of bananas, are sometimes mistaken by mothers for worms. If you are in doubt, put the things into a small bottle with methylated spirits and show them to your doctor. Children should not be given medicines for worms that they have not got.

Causes of Threadworms.—Every threadworm grows from an egg which has been swallowed. These eggs are very small and can be seen only with a microscope. The young child swallows some of these eggs accidentally, perhaps from the fingers of another child. When the worms crawl out to lay their eggs and so cause itching, he crushes them with his fingers, which become covered with these invisible eggs. Even though the hands are washed clean, there remain many eggs under the finger-nails. All young children put their fingers into their mouths at times, and so they are continually reinfesting themselves and increasing the number of their worms. Older children who suffer from worms will be found nearly always to have the habit of biting their nails.

Treatment of Threadworms.—If the worms are numerous, medical treatment will give relief. Strong medicines are necessary, and, as these may be dangerous, they should be given only under medical direction. Injections of strong salt and water (as much salt as the water will dissolve), given after the bowel has been emptied, will often bring away many worms, and these injections are harmless. Though many worms may be brought away by medical treatment, there are nearly always a few left behind. From these the child will probably reinfest himself, and in a few months may have as many as before.

The real cure of threadworms depends on the mother. Make the child sleep in good thick "combinations", so that his fingers cannot get at the worms to crush them. Smear some vaseline around the anus before he goes to bed to prevent the worms crawling and causing itching; or ask your doctor for some ointment which will kill the worms when they come out. If reinfection is prevented the few worms left will die out of themselves.

THE MEDICAL EXAMINATION OF RECRUITS.

SIR: How can psychiatrists assist in the elimination of the mentally unfit and unstable from the military forces?

Dr. Selby Link, to whom we must be obliged for ventilating this question in your columns, has pointed out that gross psychotics and, one might add, the more obvious defectives, will be recognized in the course of the general medical examination. Any man who has been in a hospital under treatment for some mental or nervous condition should be rejected unless there is clear evidence that the condition from which he has recovered was produced by some physical factor which is not likely to recur. I feel sure that this is a wise policy, even though most superintendents of mental hospitals can recall the names of ex-patients who acquitted themselves well in the last war. As for psychoneurotics, only those with neuro-circulatory and neuro-muscular instability are likely to be noticed. The problem turns on the ascertainment of psychopaths and neurotics who are physically and emotionally stable under examination but who could give a significant history if they were asked and whose weaknesses come to light only under certain environmental conditions. Unless he is self-confessed, a neurotic may not come under medical notice until late in the course of training or on active service. However, every case must be considered on its merits, and it would be, I consider, a mistake to reject all with neurotic tendencies as unfit. Dr. Link points out that some of these, "the obsessionals, certain types of homosexuals, and the gangster types", may be made to respond to morale of the right kind. In this respect the psychiatrist, accustomed as he is to assessing the capacity of his patients to react to the various circumstances of life, can make a useful contribution to the talent which is already being directed to medical problems of recruitment and training. The disposal of the doubtfully unfit will

assume greater importance as the demand for man power grows.

But there is another matter to which I would call the attention of the medical advisers to the military authorities. What is the value of the psychological, or rather the psychometric, examination of recruits? Psychologists (non-medical) have already urged in the lay Press, and no doubt in other quarters, that their services should be used by the army. It will be recalled that during 1918 some 2,000,000 men of the American Army were subjected to the army alpha group tests of intelligence and that the results were regarded as of the greatest value in assessing the fitness of recruits for training and in the selection of men for non-commissioned and commissioned rank. One disconcerting result, however, was the estimate of an average mental age of about twelve years in the army, and this after obvious dullards had already been rejected on recruitment. Doubt has naturally been expressed as to the reliability of the tests. Perhaps there was something to be said for assessing the intelligence of large numbers of men lacking any comparable educational standard who had quickly to be graded into superior and subordinate positions. The psychologist who has experience in vocational guidance has methods of estimating mechanical and manual aptitudes and other abilities which might be applied to would-be fitters and other tradesmen, and the medical branch of the air force has long since evolved tests for the special qualities needed for its personnel; but as yet psychologists have not been able to supply any reliable tests of temperament, of capacity for leadership or of the social and many other qualities which, in addition to adequate intelligence, are desirable in the various ranks of the army.

These soldierly attributes can for the most part only be ascertained in the course of training.

In expressing my own opinion I would invite others to give these matters their thought in order that psychologists may not catch us unawares with schemes for a "scientific" grading of the military forces.

Yours, etc.,

Sydney,
July 1, 1940.

W. S. DAWSON.

TUBERCULOUS RHEUMATISM.

SIR: Rheumatic fever, though perhaps the most important, is not the sole cause of subacute rheumatism, and Dr. Douglas Anderson does well in THE MEDICAL JOURNAL OF AUSTRALIA, Volume I, 1940, pages 893-894, to name tuberculosis as another.

The story of the association of tuberculosis and rheumatism goes back very many years; it was frequently on the lips of Dr. Camac Wilkinson in his lectures at the University of Sydney at least as early as 1905, and is described in his book "The Treatment of Consumption", London, 1908, pages 86-87. Antonin Poncet wrote on it in the *Bulletin de l'Académie de Médecine* in 1907 (quoted in the *Epitome, The British Medical Journal*, Volume I, 1907, page 117); Griffiths, in the *Australasian Medical Gazette*, 1907, page 286, and at greater length in Volume II, 1912, pages 647-648, and in his "Studies in Pulmonary Tuberculosis", London, 1911, pages 21 and 24-28; the patient whose case is described on page 21 is well in 1940. Poncet and Leriche published their book on "Le rhumatisme tuberculeux" in 1910.

Tuberculous rheumatism is not, of course, the same as acute rheumatic fever. It presents the following differences: there is no primary angina, excessive sweating is rare, endocarditis is rare, relapses are very frequent, salicylates fail to relieve it, the patient reacts to a tuberculin test, and progressively increased injections of tuberculin ameliorate and usually cure. *Erythema nodosum* is a common accompaniment of tuberculous rheumatism.

Yours, etc.,

131, Macquarie Street,
Sydney.
July 1, 1940.

GUY GRIFFITHS.

Naval, Military and Air Force.

APPOINTMENTS.

THE undermentioned appointments, changes *et cetera* have been promulgated in the *Commonwealth of Australia Gazette*, Number 120, of June 27, 1940.

AUSTRALIAN IMPERIAL FORCE.

Colonel A. P. Derham, M.C., is appointed Assistant Director of Medical Services, Headquarters, 8th Division.—(Ex. Min. No. 120—Approved 26th June, 1940.)

AUSTRALIAN MILITARY FORCES.

NORTHERN COMMAND.

First Military District.

Australian Army Medical Corps.

Captain D. G. Croll is appointed from the Reserve of Officers (A.A.M.C.), 22nd May, 1940.

EASTERN COMMAND.

Second Military District.

Australian Army Medical Corps.

To be Captains (provisionally) supernumerary to establishment pending absorption—Maxwell Albert Napthall, 17th May, 1940; Wallace James Pullen and James Struan Robertson, 20th May, 1940, and Carl Russell Furner, 22nd May, 1940; Major W. P. MacCallum, D.S.O., M.C., is appointed from the Reserve of Officers (A.A.M.C.), 21st May, 1940. The following officers are appointed from the Reserve of Officers (A.A.M.C.), and to be Captains (provisionally), from the dates stated: Honorary Captains H. M. Cutler and F. C. Rogers, 21st May, 1940, and Honorary Captain H. B. Woolford, 27th May, 1940.

SOUTHERN COMMAND.

Third Military District.

Australian Army Medical Corps.

The following officers are appointed from the Reserve of Officers (A.A.M.C.), and to be Captains (provisionally), from the dates stated: Honorary Captain W. H. Long, 17th May, 1940; Honorary Captains Z. Schwartz and J. C. Stewart, 13th May, 1940; Honorary Captains L. G. Morton and D. O. Brown, 23rd May, 1940; Honorary Captains D. J. Thomas and B. K. Rank, 27th May, 1940, and 31st May, 1940, respectively. Captain T. P. Crankshaw ceases to be seconded, 6th June, 1940.

Australian Army Medical Corps Reserve.

To be Honorary Captains—Cecil Bryden Berryman, 24th May, 1940; Arthur Porena John Plant, John Vincent Bullen, George Johnstone Campbell, Athol Vaughan New Allwright, Francis John Foley and Francis Henry Gaunson, 30th May, 1940.

Fourth Military District.

Australian Army Medical Corps.

To be Captain (provisionally)—John Edward Barker, 30th May, 1940. Honorary Captain J. F. Funder is appointed from the Reserve of Officers (A.A.M.C.), and to be Captain (provisionally), 29th May, 1940.

WESTERN COMMAND.

Australian Army Medical Corps.

Honorary Captain F. E. Gallash is appointed from the Reserve of Officers (A.A.M.C.), and to be Captain (provisionally), 17th April, 1940.

Australian Army Medical Corps Reserve.

To be Honorary Captains—Harold Henry Rushton Nash and Lancelot Graham Bowser Cumpston, 25th May, 1940, and David Lloyd Mercer, 1st June, 1940.—(Ex. Min. No. 122—Approved 26th June, 1940.)

DECORATION.

It has been announced that Surgeon-Lieutenant Robert Andrew Duval, an Australian graduate, has been awarded the Distinguished Service Cross for his services in the second battle of Narvik while serving on the destroyer *Eskimo*.

Obituary.

FREDERICK CHARLES HIGGINS.

DR. FREDERICK CHARLES HIGGINS, whose death has been recorded in these pages, was born at Scone in the Hunter River district, New South Wales, on July 6, 1867. He received his early education at Sydney Grammar School and studied medicine at the University of Sydney. At Saint Andrew's College he took a leading part in sport and in the other aspects of collegiate life. He was a prominent member of the University Musical Society. Graduating as Bachelor of Medicine and Master of Surgery in 1897, he became a resident medical officer at the Coast Hospital (now Prince Henry Hospital). At this time he became seriously ill, but when he recovered he did the work of an insurance medical officer for a short period and settled in Walgett, New South Wales. The climate did not suit him and in 1900 he moved to Penrith, New South Wales, where he remained till his death.

Frederick Charles Higgins was a conscientious and painstaking practitioner; he soon gained the confidence of the people in the district, and it was in fact almost impossible to think of the life of Penrith without thinking of him. He was transparently honest and was content with simple pleasures; and people came to him with their troubles, knowing that they would always receive sympathy and comfort as well as help. When his wife died in 1906 he devoted himself to his four daughters, and those who were admitted to the family circle know how intense his devotion was. He took an interest in all affairs of the district—the hospital, the sporting bodies and his church. He was fond of music and wrote some compositions, particularly church music. Frederick Charles Higgins was a general practitioner of the best type—he did his duty with a cheerful heart, and those among whom he lived and worked were the happier and the better for his having been among them.

GEOFFREY MERVYN FAITHFULL.

WE regret to announce the death of Dr. Geoffrey Mervyn Faithfull, which occurred on July 2, 1940, at Sydney, New South Wales.

Proceedings of the Australian Medical Boards.

NEW SOUTH WALES.

THE undermentioned have been registered, pursuant to the provisions of the *Medical Practitioners Act, 1938-1939*, as duly qualified medical practitioners:

McGovern, Vincent John, M.B., Ch.B., 1938 (Univ. New Zealand), Royal Prince Alfred Hospital, Camperdown.

Watson, Shane Andrew Clarke, M.B., B.S., 1939 (Univ. Sydney), General Hospital, Brisbane.

Watson, Kenneth John Maurice, M.B., B.S., 1939 (Univ. Sydney), General Hospital, Brisbane.

The following additional qualification has been registered:

Lipscomb, John Francis (M.B., B.S., 1933, Univ. Sydney), F.R.C.S. (England), 1939.

Notice.

ALL copies of THE MEDICAL JOURNAL OF AUSTRALIA of the issues of June 1 and June 8, 1940, that are sent to North and South America were lost when R.M.S. *Niagara* was sunk off the coast of New Zealand. These copies include many for other journals and for medical school and hospital libraries. Readers who have read their copies of these issues and can now spare them are asked to send them to the Manager of this journal, so that American deficiencies may be made good.

Books Received.

COMMON MISTAKES OF SURGERY IN INDIA AND HOW TO AVOID THESE, by Lt.-Col. A. N. Palit, O.B.E., F.R.C.S., M.R.C.O.G., I.M.S.; 1940. Calcutta: The Book Company. Demy 8vo, pp. 401. Price: 8s. 6d. net.

Diary for the Month.

JULY 16.—New South Wales Branch, B.M.A.: Ethics Committee.
JULY 17.—Western Australian Branch, B.M.A.: Branch.
JULY 18.—New South Wales Branch, B.M.A.: Clinical meeting.
JULY 23.—New South Wales Branch, B.M.A.: Medical Politics Committee.
JULY 24.—Victorian Branch, B.M.A.: Council.
JULY 25.—South Australian Branch, B.M.A.: Branch.
JULY 25.—New South Wales Branch, B.M.A.: Branch.
JULY 26.—Tasmanian Branch, B.M.A.: Council.
JULY 26.—Queensland Branch, B.M.A.: Council.
AUG. 1.—South Australian Branch, B.M.A.: Council.
AUG. 2.—Queensland Branch, B.M.A.: Branch.
AUG. 6.—New South Wales Branch, B.M.A.: Organization and Science Committee.
AUG. 7.—Victorian Branch, B.M.A.: Branch.
AUG. 7.—Western Australian Branch: Council.
AUG. 9.—Queensland Branch, B.M.A.: Council.
AUG. 13.—Tasmanian Branch, B.M.A.: Branch.
AUG. 13.—New South Wales Branch, B.M.A.: Executive and Finance Committee.

Medical Appointments.

Dr. J. J. Donnellan has been appointed a Medical Officer in the Office of the Director-General of Public Health of New South Wales.

Dr. J. A. Rolland and Dr. T. L. McLarty have been appointed Members of the Board of Optical Registration, under the provisions of the *Opticians Act*, 1920-1935, of South Australia.

Dr. G. Viner-Smith has been appointed a Member of the Medical Board at Port Pirie, under the provisions of the *Workmen's Compensation Act*, 1932-1938, of South Australia.

Dr. H. G. Cummine has been appointed Government Medical Officer at Thursday Island, and a Health Officer for the purposes of *The Health Acts*, 1937 to 1939, of Queensland.

The following honorary appointments have been made at the Royal Adelaide Hospital, Adelaide, South Australia: Surgeons: Dr. L. C. E. Lindon, Dr. I. B. Jose; Surgeon to the Neurosurgical Clinic: Dr. L. C. E. Lindon; Aural Surgeon: Dr. W. C. Sangster; Assistant Surgeons: Dr. G. H. Burnell, Dr. W. J. W. Close, Dr. A. F. Hobbs; Physicians: Dr. G. A. Lendon, Dr. W. Ray, Dr. A. R. Southwood; Assistant Physician: Dr. E. F. Gartrell; Anaesthetist: Dr. G. Brown; Assistant Anaesthetists: Dr. H. R. Branson, Dr. R. N. Reilly; Bacteriologist in Charge of Vaccine and Asthma Clinic: Dr. D. L. Barlow; Ophthalmologist: Dr. M. Schneider; Assistant Ophthalmologist: Dr. G. H. B. Black; Temporary Assistant Surgeon: Dr. S. Krantz; Temporary Clinical Assistant to the Surgical Section: Dr. B. E. Lawrence.

Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment referred to in the following table without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

BRANCHES.	APPOINTMENTS.
NEW SOUTH WALES: Honorary Secretary, 135, Macquarie Street, Sydney.	Australian Natives' Association. Ashfield and District United Friendly Societies' Dispensary. Balmmain United Friendly Societies' Dispensary. Leichhardt and Petersham United Friendly Societies' Dispensary. Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney. North Sydney Friendly Societies' Dispensary Limited. People's Prudential Assurance Company Limited. Phoenix Mutual Provident Society.
VICTORIAN: Honorary Secretary, Medical Society Hall, East Melbourne.	Associated Medical Services Limited. All Institutes or Medical Dispensaries. Australian Prudential Association, Proprietary, Limited. Federated Mutual Medical Benefit Society. Mutual National Provident Club. National Provident Association. Hospital or other appointments outside Victoria.
QUEENSLAND: Honorary Secretary, B.M.A. House, 225, Wickham Terrace, Brisbane, B.17.	Brisbane Associate Friendly Societies' Medical Institute. Proserpine District Hospital. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL or position outside Australia are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.
SOUTH AUSTRALIAN: Secretary, 178, North Terrace, Adelaide.	All Lodge appointments in South Australia. All Contract Practice Appointments in South Australia.
WESTERN AUSTRALIAN: Honorary Secretary, 205, Saint George's Terrace, Perth.	Wiluna Hospital. All Contract Practice Appointments in Western Australia.

Editorial Notices.

MANUSCRIPTS forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary be stated.

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